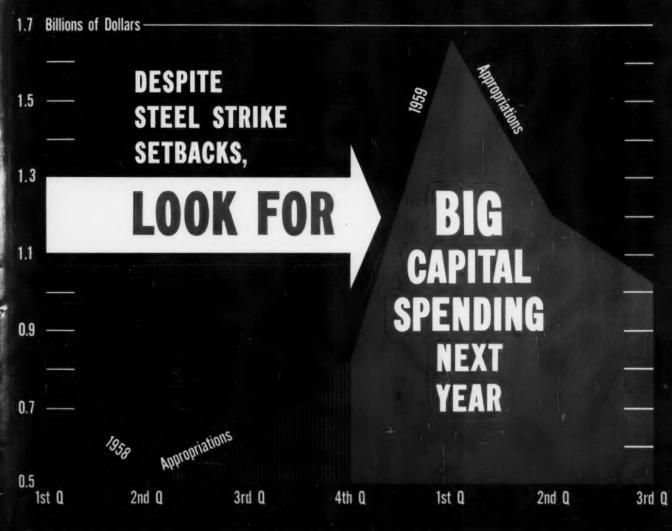
# The IRON AGE

December 17, 1959

A Chilton Publication

The National Metalworking Weekly



A Special Report on Metalworking Capital Appropriations—P. 137

Steelmakers Campaign
For Workers' T-H Votes P. 123

Find True Tolerances - P. 165

Digest of the Week - P. 2-3

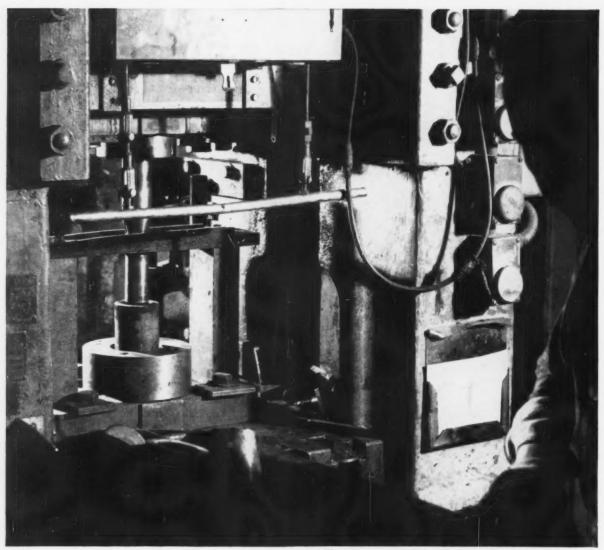


Photo courtesy of Heintz Division, Kelsey Hayes Company

# HIGH PRODUCTION cold extruding proof of Aristoloy uniform quality

High-speed production of cold extruded parts like this track link bushing for a midwest equipment manufacturer can not tolerate variations in quality. Physical and chemical uniformity are all-important if costs are to be kept in line and rejects eliminated.

In and rejects eliminated.

Aristoloy 8620 electric furnace steel meets the high quality requirements of Heintz Division of Kelsey Hayes Company and its customers.

From the melt shop to rolling and finishing operations, careful control guarantees that delivered bars will meet the most rigid standards of quality.

For complete information about Aristoloy leaded or standard carbon, alloy and stainless grades, call the Copperweld representative in your nearest large city. Or write today for NEW PRODUCTS & FACILITIES CATALOG.





COPPERWELD STEEL COMPANY



# Tool Steel Topics ETHERE



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.



# Lehigh H Teams Up with Brake Die

Result: 150,000 Box Tops

The job was a tricky one. It called for the blanking and forming of .010-in. black plate into hinged tops for children's paint boxes. But with the black plate already lithographed, it was imperative to avoid marring the material.

The manufacturer, Sobel Metal Products Co., Easton, Pa., talked it over with his local Bethlehem tool steel distributor, Luria Steel Supply Co., Catasauqua, Pa. The Luria representative proposed the use of Lehigh H for the die, and Brake Die for the punch. This proved a wise choice, for combined, the two tool steel grades turned out 150,000 pieces without any need for redressing.

And the black plate received nary a scratch.

Bethlehem Lehigh H (AISI D-2) is our easy machining high-earbon, highchrome tool steel. It is an air-hardening grade, with plenty of wear-resistance thanks to its excellent carbide distribution. Brake Die, a grade of special analysis steel, is oil quenched and tempered to develop the mechanical properties needed for maximum wear and toughness

Bethlehem regularly produces about 30 different grades of tool steel—a range so wide as to meet virtually every requirement. For full information, call your Bethlehem tool steel distributor.

#### BETHLEHEM TOOL STEEL **ENGINEER SAYS:**



Hot-Work Tools Last Longer When Thermal Stress Is Reduced

Deterioration of hot-work tools in service by heat checking or cracking depends largely on the severity of thermal stress developed in service. Anything which can be done to decrease the magnitude of the thermal stress will increase the service life of the tools.

One of the most essential steps in using hot-work tools is to preheat them to their normal working temperature before use. This seemingly insignificant step will often improve the tool life appreciably because it decreases the severity of the initial stress cycles.

The provision of multiple tools which are used in succession is another simple way to decrease thermal stresses on certain types of hot-work tools. For example, on piercing operations the press may be provided with as many as six piercing punches mounted on an indexing fixture. After each piercing operation a different punch is moved into position for the next operation. This permits each punch to cool during the time of the next five operations, greatly reducing the severity of thermal stress. The service life of punches used in this manner is often twice that of punches used continuously in the same operation.



Air-4 hardens in air at 1550F.



# With AIR-4 You Get Air-Hardening at Low Temperatures ... FREE MACHINING ... EXCELLENT WEAR

Air-4, Bethlehem's new medium-alloy tool steel, hardens in air at 1550F, and has excellent free-machining properties due to its carefully controlled addition of lead. It has exceptional wear-resistance and high toughness. Moreover, it can be heat-treated with complete freedom from the dangers of cracking. Ask your Bethlehem tool steel distributor for complete information on Air-4.

#### THE IRON AGE Chestnut and 56th Sts. Philadelphia 39, Pa., SH 8-2000 GEORGE T. HOOK, Publisher

EDITORIAL STAFF TOM C. CAMPBELL, Editor-in-Chief GEORGE F. SULLIVAN, Editor

GEORGE F. SULLIVAN, Editor
Managing Editor
News Editor
R. D. Raddant
Technical Editor
Asst. News Editor
R. H. Eskelman
Metallurgical Editor
C. L. Kobrin
Nonferrous News Editor
F. J. Starin
Nonferrous News Editor
F. J. Cathey, R. R.
S. Cowperthwaite, J., M. N. Redstreake. Regional Editors: R. W. Beneditors, R. R. Koy, Los Angeles; G. J.
McManus, Pittsburgh; G. H. Baker,
N. R. Regeimbal, Washington Correspondents: F. L. Allen, Birmingham; N.
Levenson, Boston; R. E. Koebbe, St.
Louis; J. Miller, San Francisco; R. Kazariun, Buffalo; D. R. Coughlin, Seattle;
A. T. Collins, Houston; F. Sanderson,
Toronto; F. H. Harley, London, England. Chilton Editorial Board: Paul
Wooton, Washington representative.
Robt. Gunning—Readability Consultant
WASHINGTON EDITORIAL OFFICE

WASHINGTON EDITORIAL OFFICE Washington 4... National Press Bldg. BUSINESS STAFF

Warren Owens Oliver Johnson R. H. Groves W. M. Coffey Richard Gibson Production Manager Production Managel Director Research Marketing Director Circulation Mgr. Promotion Manager Asst. Research Dir.

REGIONAL BUSINESS MANAGERS \*Denotes editorial office also

Atlanta 3 .............J. W. Sangston 32 Peachtree St., NE. Jackson 3-6791 \*Chicago 1. T. H. Barry, W. R. Pankow 360 N. Michigan Ave. Randolph 6-2166 \*Cleveland 15, R. W. Watts, R.L. White 930 B. F. Keith Bldg. Superior 1-2860 Columbus 15, Ohio ... Harry G. Mumm LeVeque-Lincoln Tower Capital 1-3764 \*Detroit 2...... W. J. Mulder 103 Pallister Ave. Trinity 1-3120 \*Los Angeles ...... R. Raymond Kay 1920 Strand Manhattan Beach Faculty 1-5306

\*New York 17...C. T. Post, I. E. Hand 100 E. 42nd St. Oxford 7-3400 \*Philadelphia 39— B. L. Herman, J. A. Crites, W. E. Carr Chestnut & 56th Sts. Sherwood 8-2000

\*Pittsburgh 19...... T. M. Fallon 1707 Frick Annex Bldg. Atlantic 1-1830 W. Hartford 7.... 62 LaSalle Rd. .....Paul Bachman Adams 2-0486 A Chilton Publication

CHILTON OFFICERS & DIRECTORS

G. C. Burby, President Vice-presidents: P. M. Fahrendort, L. V. Rowlands, G. T. Hook, R. E. McKenne; Treasurer: W. H. Vallar; Directors: M. E. Cox, F. P. Tighe, E. B. Terhune, Jr., R. W. Case, Jr., C. A. S. Heinle, J. H. Kofron—Comptroller, Stanley Appleby. Indexed in Applied Science & Tech-nology Index and Engineering Index.



Copyright 1959 by Chilton Company THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 58th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged thersis, \$5 for 1 year, \$8 for 2 years in the United States, its territories and Canada. All others \$15 for 1 year; other Western Hemisphere countries, \$25; Other Power States and Canada. All others \$15 for 1 year; other Western Hemisphere countries, \$25; Other Power States and Canada. All others \$15 for 1 year; other Western Hemisphere countries, \$25; Other Power States and Canada. All others \$15 for 1 year; other Western Hemisphere countries, \$25; Other States and S

# IRON AG

December 17, 1959-Vol. 184, No. 25

# Digest of the Week in

\*Starred items are digested at right.

#### **EDITORIAL**

A	Christmas	Settlement:	Wouldn't	It	
	Be Wonde	rful?			7

#### **NEWS OF INDUSTRY**

*Steel Promotes Its Wage Offer	123
*The Circle Closes	125
*Can Market: New Aluminum Bid	126
Carmakers Aim at Record Output	127
*Depreciation Reform	131
*An IDON ACE Special Deposit to	

#### IKUN AGE Special Report to **Management:** A Major Advance in Capital Spending in 1960 137

#### FEATURE ARTICLES

*Math Improves Machine Tolerances	165
*Degas With Lithium	168
*Electroslag Welding	170
*Design Rack for Coil Storage	
*Adhesive Bonds Metal Container	174
Diamond Grit Dresses Wheels	176

#### **NEWS ANALYSIS**

Newsfront														
Report to M	la	na	ng	e	n	16	elli	ıt						
*Automotive														
*Washington							Ü							
West Coast														
*Machine To														

#### **MARKETS & PRICES**

Market Planning Digest	. 121
*The IRON AGE Summary	199
*Purchasing	
Iron and Steel Scrap Markets	
Nonferrous Markets	. 206

#### REGULAR DEPARTMENTS

Letters From Re	28	ıd	e	r	3								11
Industrial Briefs													158
Men in Metalwo	T	k	in	12	1								161
Patent Review			Ţ			ì		Ü	ĺ	Û			178
Free Literature			ì										181
Design Digest													
New Equipment													
NDEX TO ADV	V	F	R	7		S	F	2	2				222

#### **NEWS ARTICLES**

#### STEEL WAGE OFFER

Battle for Support—The steel industry is using every method possible from talks to advertising to get a favorable vote on its wage offer next month. But proposal faces an uphill P. 123

#### CAN SETTLEMENT

Circle Closes-Settlement of the can companies with the Steelworkers is a major part of union strategy. Inflationary aspect of the contract is a blow to steel industry's anti-inflation drive.

#### **ALUMINUM CANS**

Made Faster-New impact extruder, made by E. W. Bliss Co. for Aluminum International Inc., makes



120 beer cans per minute. AI is already planning for a 200 can per P. 126 minute machine.

#### DEPRECIATION

Industry Reports - Industrial leaders tell what they want in the

# DESPITE STEEL STRIKE SETAOUS. LOOK FORT CAPITAL SPENDING NEXT YEAR A Special Report on Metalworking Capital Appropriations—P. 137

#### COVER FEATURE

Capital Appropriations — Latest survey of metalworking's plans for new plants and equipment indicates a pickup in 1960. Actual appropriations for the first nine months of this year run 115 pct ahead of the rate of 1958.

P. 137

# Metalworking

way of depreciation revision. P. 131

#### **ELECTION YEAR**

Full Power — Labor Secretary Mitchell is going all out to get a steel settlement. Because 1960 is an election year, he particularly wants to see the strike end to keep on the good side of voters.

P. 153

#### FEATURE ARTICLES

#### **CLOSER TOLERANCES**

Through Statistics — How many times out of 100 or even 1000 tries will the parts produced by a machine come out to spec? You must know these "odds" to succeed in this age of close tolerances. A reliable method to control machine accuracy lies in the field of statistical studies.

P. 165

#### **DEGAS STAINLESS STEEL**

By Adding Lithium—The problem of gas content in stainless steel might end by adding lithium to the molten steel, and purging with argon. Lithium is currently providing clean and almost complete deoxidation for copper melts. It should be a good degasser of steel, too. P. 168

#### **ELECTROSLAG WELDING**

oer

26

rial

the

1959

For Thick Sections—The principle of electroslag welding can be applied on metal sections, two to 10 in. thick. Welding is carried out automatically in the "vertical up"

position in a single pass. This unusual method uses one to three electrode wires.

P. 170

#### COIL RACK DESIGN

Ups Storage Area—A specially-designed rack helps one company keep track of 12,000 different coils of steel. Anyone can easily construct such a rack from angle irons, I-beams and channels, thereby speeding stock flow.

P. 173

#### BOND METAL CONTAINERS

With Adhesives—It costs money to ship instruments—damage free. A new metal container, joined by an adhesive, gives the strength and lightweight construction to withstand the rough handling during shipment.

P. 174

#### MARKETS & PRICES

#### PLASTICS IN AUTOS

New Techniques Needed—Use of plastics in autos will only show a slight increase in 1960 models. New

production techniques to mass produce large parts are needed before use will rise sharply.

P. 149

#### SURPLUS TOOLS

Ship Them Overseas — Nobody wants to see the government dump its surplus machine tools on the American market. Why not sell or give them to underdeveloped countries that need them but can't afford new machines. The plan could work like farm surplus disposal programs.

P. 157

#### STEEL SUMMARY

Circle Closes—Encirclement tactics of the Steelworkers (through contracts in copper, the can industry, smaller steel mills) will have no effect on major steel negotiations. But an enforced contract could result in steel price increases. P. 199

#### AWARD WINNERS

Teamwork—Winners of the Gray Iron Founders' Society prove that teamwork pays off in cutting costs. They were able to save their firm thousands of dollars.

P. 200

#### **NEXT WEEK**

#### INVENTORY REBUILDING

Key Factor in 1960? — Next week's special report will show materials and parts stocks are low, but demand for finished products is high. What's the outlook for rebuilding steel inventories early?



THE IRON AGE, December 17, 1959



MidVac Rolls

MIDVALE-HEPPENSTALL CO., NICETOWN, PHILADELPHIA 40, PA.

Subsidiary of HEPPENSTALL COMPANY, Pittsburgh, Pa.



# Which **Bearing** should you buy?

— They're dimensionally interchangeable, but dimension is only one of many factors to consider. At left, is a superprecision bearing, made to the most critical specifications and good for thousands of trouble-free hours of service in the proper application. This bearing is a waste of money and often a source of trouble in less demanding applications.

At right, a standard bearing suitable for applications where preload, run-out and tolerances are not too demanding.

Which should you buy? Let our bearing engineers help you. When you buy super-precision from Bearings, Inc.,

you get super-precision bearings in the manufacturers' original boxes — factory-fresh and incorporating the latest improvements. They are usually carried in stock and delivery is immediate.

If a standard bearing is best, you will get it fast from Bearings, Inc. And above all, when your Receiving Department checks the bearings received against your purchase order, you'll find you have received what you have ordered—exactly with no "just as good" substitutions!

Call the Bearings, Inc. branch nearest you NOW!

Providing bearing service in the North>

G

C

ling ow, ices

e a fine nonlling

n for and nake wired oper,

plete Rolls.

and

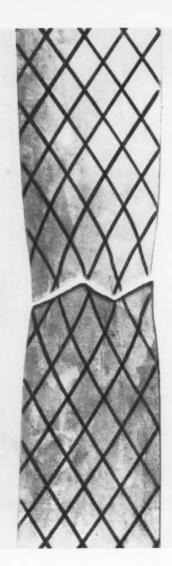
in the South>

# BEARINGS, INC.

OHIO: Akron • Centon • Cincinnati • Cleveland • Columbus • Dayton • Elyria • Hamilton • Lima • Lockland • Mansfield • Painesville • Tolede • Youngstown Zanesville • INDIANA: Ft. Wayne • Indianapolis • Muncie • Terre Haute • PENNSYLVANIA: Erie • Jelnstown • Philadelphia • Pittsburgh • York WEST VIRGINIA: Charlesten • Huntington • Parkersburg • Wheeling • NEW JERSEY: Camdon NEW YORK: Balanrol Corp., Buffelo • Niagara Fella • MARYLAND: Baltimore • DELAWARE: Wilmington

# DIXIE BEARINGS, INC.

FLORIDA: Jacksonville • GEORGIA: Atlanta • KENTUCKY: Louisville • LOUISIANA: Baten Rauge • New Orleans
N. CAROLINA: Charlette • Greensbore • S. CAROLINA: Greenville • TENNESSEE: Chattaneoga • Kingsport • Knoxville • Hashville
VIRGINIA: Norfolk • Richmend





# 70% stretch does not flake or peel coating on Armco ZINCGRIP Steel

Grid-lined specimens of Armco Zincgrip® Steel were gripped in the jaws of a tensile tester and pulled apart. Elongation in the fracture zone was about 70 per cent.

The photo of a typical specimen shows what happened. The rust-resisting zinc coating *stretched* right to the broken edge. It also shows what *didn't* happen. The tight zinc coating did not flake or peel at the fracture line when the base metal gave way.

# Proved by performance

Laboratory tests only confirm what fabricators throughout the country have known for almost a quarter-century. ZINCGRIP's coating is ductile. In drawing, forming, piercing, bending and stamping it will not flake or peel.

# **ARMCO STEEL**



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation



Fill in and mail the coupon for more information on workable Armco ZINCGRIP Steel—the steel with the rust-resisting coating that stays on.

3279 Curtis Street, Middletown, Ohio

NAME TITLE

FIRM

STREET

CITY ZONE STATE

ARMCO STEEL CORPORATION

# A Christmas Settlement: Wouldn't It Be Wonderful?

This is the season for peace on earth, good will to all men. This is the time we let bygones be bygones.

It is the time—if we are honest—when we don't seek the mote in our brother's eye because we know we have a beam in our own. (St. Luke, vi; 36.)

There are many who are praying there will not be another steel strike. Others are sure that the "government" won't let the men go out again.

Hundreds of thousands of bystanders who were affected do not want to see another walkout. Wives and workers don't want a new walkout. Union people don't want to call another strike. Management surely doesn't want to see the men go out again.

Both sides—represented by the union and the management teams—are dug in. What one hears is hope, not probability. Both say they are right. Each says the other is wrong. Both have weighty principles at stake—though neither recognizes that the other has a leg to stand on.

Despite millions of words written, spoken, and thought, there is still confusion. The only ones who claim to know the issues are the union team and the management team. Each appears impatient if anyone fails to see completely the points made by its side.

Never in their history have Federal mediators seen such a hassle. Nor in all their combined years have they ever seen such a hopeless situation—as long as neither side will budge now.

Both sides have given. Both sides have pulled back from the unrealistic stands of last May. Both sides have tried to bargain. But both sides failed miserably when it came to communicating with each other.

So, if all could be forgotten, if in the spirit of the season both sides could agree on an economic package close to offers now on the table (which are less than a few cents and a misunderstanding apart) . . .

If the union and management could take each other on faith that each would want to work hand in hand to correct local work conditions, if management could remember that the union chiefs and the union must live too, and if the union could work together with management for the benefit of each other and for all employees, stockholders—and the public. . . .

That, indeed, would be a Christmas blessing!

Tom Campleee Editor-in-Chief

1959

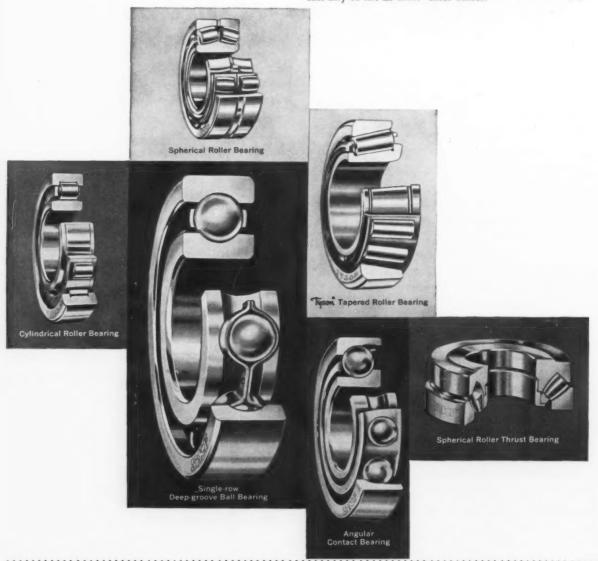
# What qualities should a "production" bearing have?

Take a single-row deep-groove bearing, for example.

As BESP makes it, the type shown here sustains heavy radial load—as well as thrust load in either direction—it can be used at normal speeds with grease lubrication or at high speeds with oil. Yet it is a standard BESP bearing.

We even mass-produce some sizes of this particular bearing at our automated Altoona (Pa.) plant. You can buy quickly and economically. There are over 100 sizes ranging from over 5%" O.D. to almost 16" O.D., with various seal, shield and snap-ring combinations.

But why not compare the quality, availability and price of this BOSF bearing (or any of the other BOSF products) with those you now use? For details, just call any of the 25 BOSF sales offices.











SKF

Spherical, Cylindrical, Ball, and Typon Tapered Roller Bearings

REG. U. S. PAT. OFF.

## Nodular Iron Takes Service

Users of nodular iron gears are reporting good results in tough applications. Recent evidence strengthens the belief that nodular iron gears should have no lower gear rating than steel gears. In laboratory load tests, both nodular iron and steel gear teeth were operated under overload conditions. The results in each case show nodular iron equals or exceeds steel in performance.

### Solves Heat Problem

Answer to the heat barrier problem, encountered by electronic parts in missile nose cones, may be gallium phosphide, a rare metal. An electronic diode, using this material, has withstood temperatures seven times higher than silicon and germanium, previously used in electronic diodes.

# Cold-Forming of Stainless

Substantial materials and processing savings are being achieved in cold extruding and forging stainless steel propeller shafts and similar parts for outboard motors. The Detroit manufacturer uses small hydraulic presses of less than 250-ton capacity in the multi-stage process. Also, the process is used on other alloy stepped shafts.

### Tests Metal Whiskers

New low-capacity tensile tester provides automatic stress-strain diagrams from metal whiskers and other delicate materials. Developed by Tinius-Olsen, this detector has multi-range load capacities of 5-600 g. Standard strain magnification ratios are 100, 200, and 400 to 1.

## More Plastics for Cars

Increased use of plastic materials is a definite prospect in 1961 model cars. After several years of testing, one plastic company has come up with a substance with excellent wear properties by substituting fiber metal for fiber glass. Twenty different transmission parts made out of the material are being readied for the auto market. Biggest item: a reverse clutch cone for the automatic transmission of a "Big Three" corporation.

# Ship in Rubber "Bottles"

Three-ton shipments of zinc oxide are now being shipped in rubber containers. Looking like a large rubber bottle, the container is equipped with a lifting eye in the top center, a filling closure in the top, and an emptying closure at the bottom. The containers are weatherproof and can be stored outside. After emptying, they are easily collapsed for further shipment.

### **Determine Gases in Metals**

The National Bureau of Standards is now in the process of developing standard samples, certified for oxygen and hydrogen content. Seven reference steels, with known gas content, act as references. These standards aid in calibration of analytical equipment which determine the gaseous elements in commercial steels.

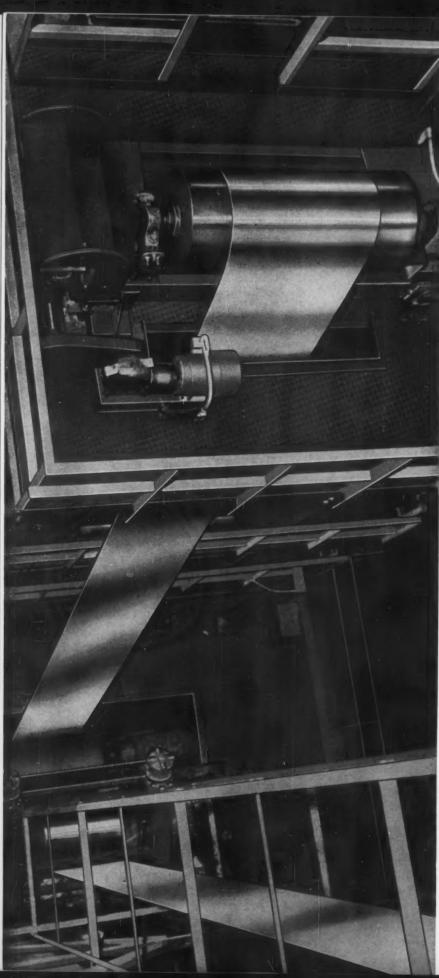
## Extrude Vanadium Tubing

Successful extrusion of commercially pure vanadium tubing was recently announced by Calumet & Hecla, Inc. Seamless vanadium tubing, according to the company, will be particularly valuable in the nuclear and process industries because of vanadium's unusual combination of light weight, high temperature strength, and corrosion resistance.

# Data on Refractory Metals

Recent report from the Defense Metals Information Center discusses transition behavior of refractory metals. It was noted that ductile-brittle transition behavior occurs in columbium, molybdenum, tungsten, and chromium. Low strain-rate hydrogen embrittlement appears to cause brittleness at low temperatues in vanadium. No brittle transition has yet been found in tantalum.

959



# LIGHT GAUGES

at High Speeds

Need Rugged

Equipment

Each step toward paper-thin tin plate accentuates the operating problem.

Tracking becomes more acute as speeds increase. Coils increase in diameter and weight. Tension becomes more critical.

The equipment must be heavy and rugged. High speeds with lower tensions in annealing, tinning and recoiling can only be accomplished with rugged equipment. Reels, both pay-off and tension, must be heavier to accommodate the bigger coils. New electrical controls are only practical when applied to sturdy mechanical equipment. Only rugged machinery, for which Aetna-Standard is noted, can stand up to 21-turn operation at high speeds with a minimum of strip breakage, down time and maintenance.

#### BLAW-KNOX COMPANY

AETNA-STANDARD DIVISION
FRICK BUILDING • PITTSBURGH, PENNSYLVANIA

57 Years' Experience in Engineering Equipment for Processing ALL Gauges of Sheet and Strip

#### LETTERS FROM READERS

#### **West Coast Praise**

Sir—A thorough reading of the West Coast News section of last week's IRON AGE has prompted some reminiscing.

I started reading your magazine as an economics student at Stanford about 1924, and have followed it rather consistently ever since. The copy that comes to our Administrative Dept. here is circulated among several of my associates, and we are always happy about the accurate and concise reporting.

olate

speeds

tical.

ter and

ensions

modate

ntrols

sturdy

g can

n.

d

ŀ

nd

ged

1

dard

ANY

NIA

May I particularly tell you how much we value the West Coast News section. The comments over the years about industrial developments, new companies and trends have been uniformly well done and are most useful in our day to day work.

This may appear to be an unusual letter, but you undoubtedly receive the other type occasionally, so I thought you would like to hear the unsolicited opinion of one of your happy subscribers. — K. L. Carver, Exec. Vice Pres., Bank of America, Los Angeles.

### **Lasting Value**

Sir—An article entitled "Cupola Practice With Briquettes" appeared in your issue of September 3, 1942, in the joint name of Messrs. A. Hambley and Kenneth Giest, as the authors. That this article should be read with interest and importance even at present, after a lapse of 17 years after its publication, is a fitting tribute to the authors and to you as well for their choice of publication in your magazine.

The article in question deals with the manufacture and use of Briquettes, for which we have recently installed a Briquetting Plant purchased from your country. These Briquettes are quite a new subject to the consumers here and they therefore, need proper education and instruction in the matter. To achieve this end, it is our desire to make reprints of this article.—S. A. Nathani, Nathani Steel Yard, Bombay, India.

Permission has been granted.—
 Ed.

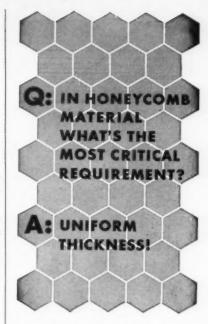
#### **Good Book**

Sir—For many years I have followed rather closely your editorials and other articles in IRON AGE. I was, therefore, very pleased to receive your booklet entitled "1959 Steel Strike." This is a splendid interpretation of the situation confronting all business.

I would greatly appreciate it if you would supply me with another copy.—G. B. Gunlogson, Western Advertising Agency, Racine, Wisc.

Sir—Your booklet, "1959 Steel Strike" is very interesting. Suggest you send a copy to Ike and Nixon, also Cooper's teammates. — C. Bauer, President, Missouri Rolling Mill Corp., St. Louis, Mo.

■ President Eisenhower, Vice President Nixon, all members of Congress, negotiators on both sides of the steel dispute, the President's Cabinet and all Federal Conciliation offices have been sent copies of booklet. The 128 page booklet prepared by the IRON AGE summarizes the steel-labor situation from the end of the 1956 strike right up to the present.—Ed.



In a recent nation wide survey of honeycomb section manufacturers by an independent research organization, 75% of the responders indicated that uniform thickness of the thin metal core material was the most important factor demanded of suppliers.

With modern equipment, such as Accu-Ray gauges, Sendzimir rolling mills and unique vertical annealing furnaces, Somers combines 50 years of pioneering in the thin metal field to answer this problem with Somers Thin-Strip®, produced exclusively by Somers Brass Co., Inc.

Somers also guarantees width tolerances as close as  $\pm$  .001", a plus feature that assures the highest precision in honeycomb structures.

Whether your thin metal problem be in stainless, nickel or its alloys, copper or its alloys, 17-7, PH-15-7 MO or other honeycomb metals, you can depend on Somers ThinStrip® to meet your most critical specifications.

Write for Confidential Data Blank without cost or obligation.



Somers Brass Company, Inc.

102 BALDWIN AVE. WATERBURY, CONN.



PHOTO BY KARSH OF OTTAWA

# "Supplier reliability is a must to sound product development"—R. W. SWANK, Research and Development, Smith-Erie Div., A. O. Smith Corp.

"We count Sharon Steel as one of our most dependable suppliers, and this is extremely important to a development engineer," says R. W. Swank, Manager of Research and Development of service station pumps in the Smith-Erie Division of A. O. Smith Corp.

Shown here with P. R. Fishburn, Manager of Manufacturing, Swank points out "If we can design with the knowledge that we need not be concerned about material analysis variation, our jobs are made that much easier. We've found we can expect this kind of supplier reliability from the Sharon Steel Corporation, Sharon, Pa."



SHARON Quality STEEL

#### **Steel at Olympics**

When the steel blades of olympic skaters flash across the ice in the 1960 Winter Olympics at Squaw Valley, Calif., steel in another form will play an important part.

Beneath the four skating rinks at the site will be 80 miles of steel refrigerating pipe. This is only one of the many roles steel will play in transforming the wilderness into a complete sports community.

Reverse Cycle—The refrigeration system, which will freeze rink ice, is designed with a reverse cycle heat pump arrangement to blow warm air through the cellular steel decking that comprises the big arena roof. The arena, the dominant structure at Squaw Valley, will be made of steel. It will be enclosed on three sides and have seating for 8000 people overlooking a 16,150 sq ft skating rink.

Other steel uses include towers for ski lifts, 23 Quonset structures for storage and maintenance, reinforcing bars for building founda-

AWAT

tions, and a complete utilities system.

#### **50 Year Toast**

Ever have champagne poured from a 50-year-old foundry ladle? Grant Brothers Foundry Co., Detroit, served it this way and the taste was sparkling.

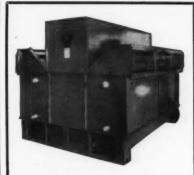
The company called together civic and industrial and some of its first employees to celebrate its 50th anniversary Dec. 6. They used a gold painted replica of a 1909 foundry ladle (see photo below) to pour the bubbling wine for the guests.

Edward F. Washington, getting his hollow-stemmed glass filled in the picture, was called back from retirement to attend the celebration. Mr. Washington, 79, took his first plane ride from his present home at Clearwater, Fla., to attend the party. He was one of the first salesmen employed by the firm.

Roy G. Oullette, company president, does the pouring for the special guest.



SPARKLING ACTION: Champagne poured from a foundry ladle tastes good at the 50th anniversary celebration of Grant Brothers Foundry Co.



NIAGARA SECTIONAL

Aero HEAT EXCHANGER

gives close temperature

control, saves you

LABOR, Power, Water

- Because the new design improves the heat transfer to the out-door air by evaporation.
- Because new features keep your equipment working for long life with "new plant" efficiency . . . always full capacity.
- Because you save 95% of cooling water cost.

You get faster, more accurate cooling of industrial fluids to specified temperatures.

You improve your quality of production by removing heat at the rate of input.

You save labor in upkeep. With full access to all interior parts and piping you see everything in easy inspections. You head off dirt accumulation and corrosion. Casing panels are removable without moving the coils. The coils can be cleaned from both sides.

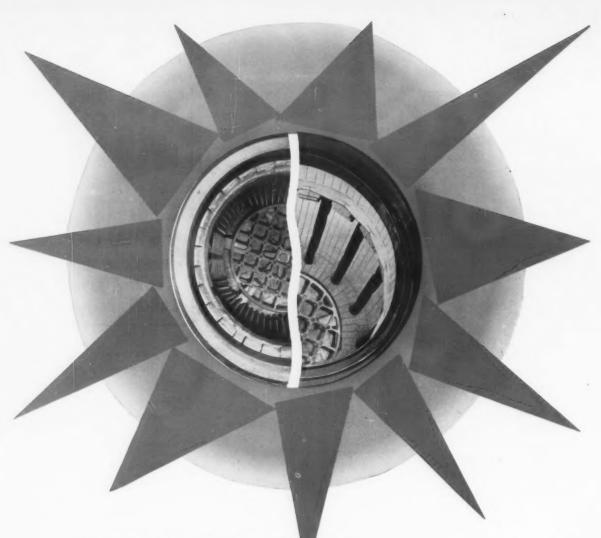
First cost is low; freight is low because of the lowest space/weight ratio; you save much labor in erection. Capacity range is 7,000,000 to 18,000,000 Btu/hr. No other heat exchange method gives you so much saving in money and convenience.

Write for Niagara Bulletin No. 132

## NIAGARA BLOWER COMPANY

Dept. IA-12, 405 Lexington Ave NEW YORK 17, N. Y.

District Engineers in Principal Cities of U. S. and Canada



# How to find a better heat-treating method

Here's a sound way to do it. Take your problems to the people who have consistently, over the years, provided the metal treating industry with new and better ideas, more efficient, more practical equipment. This will bring you to Lindberg, creators of the famous Cyclone type atmosphere furnaces, the long-life "dimple" vertical radiant tube, the revolutionary new CORRTHERM electric heating element and so many other innovations in better heat treating methods. Lindberg is synonymous with heat treating

furnaces. We build them for carbonitriding, carburizing, hardening, tempering, normalizing, bright stainless annealing, brazing, carbon correction, nitriding, or any other metal treating requirement. Give your production processes the advantages of Lindberg's forward look in "heat for industry" techniques. Get in touch with your nearest Lindberg Field Representative (See classified phone book) or write Heat Treating Furnace Division, Lindberg Engineering Company, 2452 W. Hubbard St., Chicago 12, Illinois.



BERG heat for industry

#### COMING EXHIBITS

Plant Maintenance & Engineering Show — Jan. 25-28, Convention Hall, Philadelphia. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Tool Show—April 21-28, Detroit Artillery Armory, Detroit, (American Society of Tool Engineers, 10700 Puritan, Detroit 38.)

Welding Show—April 25-29, Great Western Exhibit Center, Los Angeles. (American Welding Society, Inc., 33 West 39th St., New York 18.)

Southwestern Metal Show — May 9-13, State Fair Park, Automobile Bldg., Dallas, Texas. (American Society for Metals, Metals Park, Novelty, O.)

**Design Engineering Show** — May 23-26, Coliseum, New York. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Production Engineering Show— Sept. 6-16, Navy Pier, Chicago. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Machine Tool Exposition—Sept. 6-16, International Amphitheatre, Chicago. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Iron & Steel Show—Sept. 27-30, Cleveland Public Auditorium, Cleveland, O. (Association of Iron & Steel Engineers, 1010 Empire Bldg., Pittsburgh 22.)

## MEETINGS

er

)-

d

959

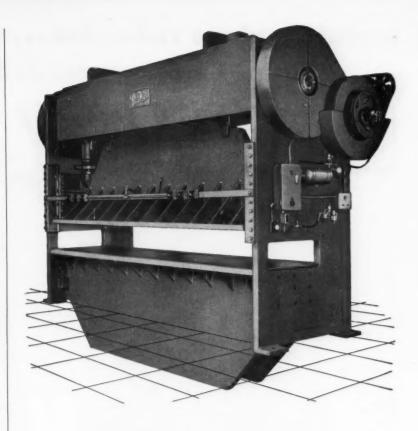
#### **JANUARY**

Institute of Scrap Iron & Steel, Inc.
—Annual convention, Jan. 10-13,
Fontainebleau Hotel, Miami Beach,
Fla. Institute headquarters, 1729
H St., N. W., Washington, D. C.

Society of Plastics Engineers, Inc.

—Annual technical conference,

(Continued on P. 16)





# PRESSES STRAIGHT-SIDE TYPE

large die area capacities up to 400 tons

This is a typical model of CHICAGO straight-sidetype presses used for multiple punching, notching, and trimming operations. This press with a die area of 48 inches by 198 inches has a capacity of 200 tons.

Complete recommendations for any job on request.



Press Brakes • Straight-Side-Type Presses • Press Brake Dies
Hand and Power Bending Brakes • Special Metal-Forming Machines

# DREIS & KRUMP

MANUFACTURING CO.
7430 South Loomis Boulevard, Chicago 36, Illinois

THE IRON AGE, December 17, 1959

# metal turnings reduction... in a



- Large Industrial **Plants**
- Aluminum **Smelters**

. . . Designed for clam shell bucket or magnet feed. Large capacities: 25 to 50 tons per hour.

- ... Built to handle the Primary Reduction of: . Metal Turnings
  - . Aluminum Alloy Castings (Crankcases, Pistons, Beer Barrels, Pots and Pans, etc.)

St. Louis 10, Mo.

Uses the Exclusive American Rolling Shredder Ring Crushing Principle.

OTHER MODELS with capacities from 1 to 10 TPH WRITE for illustrated literature

PULVERIZER COMPANY Originators and Manufacturers of Ring Crushers and Pulverizers 1439 Macklind Ave.

#### **MEETINGS**

(Continued from P. 15)

Jan. 12-15, Conrad Hilton Hotel, Chicago. Society headquarters, 65 Prospect St., Stamford, Conn.

Society of Automotive Engineers, Inc.—Annual meeting, Jan. 12-16, The Sheraton-Cadillac and Statler Hotels, Detroit. Society headquarters, 485 Lexington Ave., New York.

Industrial Heating Equipment Assn., Inc.—Annual winter meeting, Jan. 18-19, Warwick Hotel, Philadelphia. Association headquarters, 1145 19th St., N. W., Washington, D. C.

Steel Shipping Container Institute, Inc.—Winter meeting, Jan. 19-20, St. Regis Hotel, New York. Institute headquarters, 600 Fifth Ave., New York.

Steel Plate Fabricators Assn.—Annual meeting, Jan. 21-22, Roosevelt Hotel, New Orleans, La. Association headquarters, 105 W. Madison St., Chicago.

Truck Trailers Mfrs. Assn.-Annual convention, Jan. 24-27, Hotel del Coronado, Coronado, Calif. Association headquarters, 710 Albee Bldg., Washington, D. C.

Cutting Tool Mfrs. Assn.—Annual meeting, Jan. 28, Harmonic Club, Detroit. Association headquarters, 416 Penobscott Bldg., Detroit.

Assn. of Steel Distributors, Inc.-Convention, Jan. 30-Feb. 6, El Mirado Hotel, Palm Springs, Calif. Association headquarters, 29 Broadway, New York 6, N. Y.

American Institute of Electrical Engineers—Winter general meeting, Jan. 31-Feb. 5, Hotel Statler, New York. Institute headquarters, 33 W. 39th St., New York 18, N. Y.

otel, 65

eers, -16, atler uar-New

Jan. delters, gton,

tute, 0-20, insti-Ave.,

Ancose-As-W.

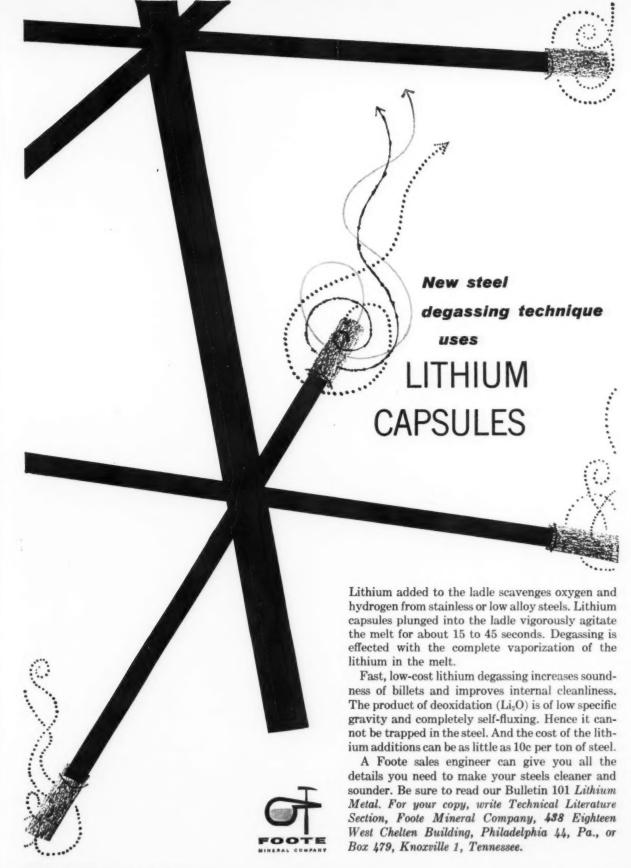
-An-Hotel . As-Albee

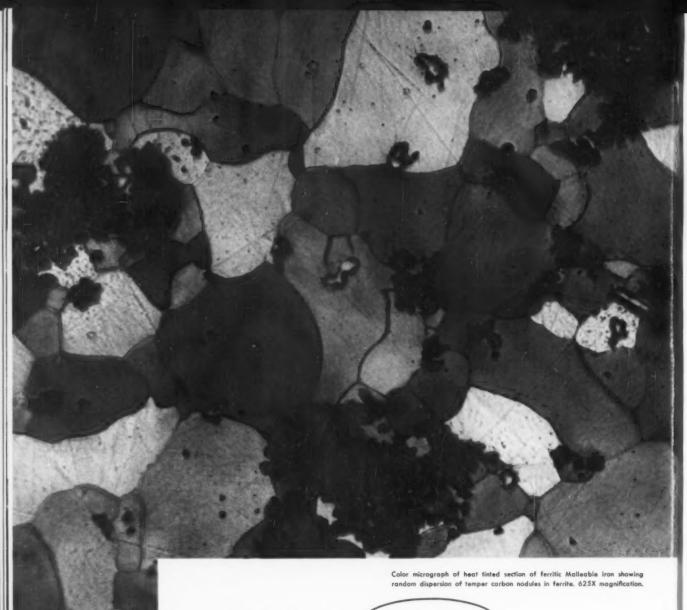
nual Club, rters,

nc.— , El rings, s, 29

trical eting, New 3 W.

1959





# Usability is (Malleable

In the growing world of metals, certain requirements remain basic: strength . . . versatility . . . economy. Malleable iron castings uniquely answer all three. Malleable castings provide more strength per dollar than any other metal . . . are the most machinable of all ferrous metals of similar hardness.

From the great range of Malleable irons now produced in modern Malleable foundries, you can select exactly the right metal to fill your most demanding needs for endurance, resistance to impact and wear, ductility and constant uniformity. No other metal offers you so much at so low a cost.

For information or service, call on one of the progressive firms that identify themselves with this symbol-MEMBER

> MALLEABLE CASTINGS COUNCIL

If you wish, you may inquire direct to the Malleable Castings Council, 1800 Union Commerce Building, Cleveland 14, Ohio, for information.

## How to Select the Best Metal to Perform a Given Set of Functions

Any equipment part can be described, at least approximately, in terms of the functions it must perform. That is, it must provide a certain strength plus resistance to wear, fatigue, impact or

corrosion. The finished part must provide the best combination of all necessary factors at the lowest possible cost a cost that must include machining. finishing and assembly where applicable.

#### **Unique Production Method Combines Desirable Characteristics**

The amount and form of carbon in ferrous metals is of prime importance. The carbon content of Malleable iron (2.00 to 2.60%) provides good fluidity at the pouring stage. Yet neither flake graphite nor combined carbon is present in finished standard Malleable iron.

As the photomicrograph of standard Malleable iron shows, the carbon has been transformed into temper carbon nodules in a matrix of ferrite during the heat-treatment given all Malleable iron castings. The result is a metal with a unique combination of high strength, toughness and machinability.

Pearlitic Malleable irons differ from standard, or ferritic, Malleable only in that a controlled amount of the carbon is combined with the iron to form a pearlitic matrix around the temper carbon nodules. This increases strength, hardness, wear resistance and modulus of elasticity, while retaining good ductility and machinability.

#### TENSILE PROPERTIES - A.S.T.M. MINIMUM SPECIFICATIONS

Standard and Pearlitic Malleable Irons										
Designation	Tensile Strength	Yield Strength p. s. i.	Elongation % in 2 in.	Ratio of Tensile to Yield %						
Standard										
35018	53,000	35,000	18	66						
32510	50,000	32,500	10	65						
Pearlitic				,						
45010	65,000	45,000	10	69						
45007	68,000	45,000	7	66						
48004	70,000	48,000	4	69						
50007	75,000	50,000	7	67						
53004	80,000	53,000	4	66						
60003	80,000	60,000	3	75						
80002	100,000	80,000	2	80						

Strengths up to 135,000 p.s.i. tensile and 110,000 p.s.i. yield are produced commercially under individual producers' specifications.

#### TYPICAL BRINELL HARDNESS NO. RANGES

Pearlitic Malleable frons												
Designation	45010	45007	48004	50007	53004	60003	80002					
B. H. N.	163-207	163-217	163-228	179-228	197-241	197-255	241-269					

#### **New Savings Result**

ore

tals

you

nce

uch

lves

ıncil.

tion.

From the wide range of properties obtainable, a Malleable iron may be selected that will most completely meet ideal design and functional requirements. Because of the great latitude of producible sizes, from a fraction of an ounce to hundreds of pounds, Malleable an be used for a wealth of applications.

Malleable iron's economy is derived in two ways. First, the casting process is generally accepted as the most economical method of producing a finished part. Secondly, being the most machinable of all ferrous metals of similar hardness, cast or otherwise, Malleable iron castings provide exceptional economies in time, tool and power consumption.

Today's Malleable iron castings offer tremendous strength, uniformity, versatility and economy. The producers of Malleable castings are anxious to assist you in getting maximum "usability." Why not let their modern design, testing and production facilities work for you?

#### Send for Special Data Unit

Your copy of Data Unit No. 101 containing additional information on the benefits you can derive from Malleable iron castings is available from any member of the Malleable Castings Council. If you wish, you may direct your request to Malleable Castings Council, Union Commerce Building, Cleveland 14, Ohio.

#### These companies are members of the



Connecticut Mall. Castings Co., New Haven 6 Eastern Malleable Iron Co., Naugatuck New Haven Malleable Iron Co., New Haven 4

#### DELAWARE

Eastern Malleable Iron Co., Wilmington 99

#### ILLINOIS

Central Fdry, Div., Gen. Motors, Danville Chicago Malleable Castings Co., Chicago 43 Moline Malleable Iron Co., St. Charles National Mall. and Steel Castings Co., Cicero 50

Peoria Malleable Castings Co., Peoria 1 Wagner Castings Company, Decatur

#### INDIANA

Link-Beit Company, Indianapolis 6 Muncie Malleable Foundry Co., Muncle National Mall. & Steel Castings Co., Indianapolis 22 Terre Haute Mall. & Mfg. Corp., Terre Haute

#### MASSACHUSETTS

Beicher Malleable Iron Co., Easton

#### MICHIGAN

Albion Malleable Iron Co., Albion Auto Specialties Mfg. Co., Saint Joseph Cadillac Malleable Iron Co., Cadillac Central Fdry. Div., Gen. Motors, Saginaw

Northern Malleable Iron Co., St. Paul 6

#### NEW HAMPSHIRE

Laconia Malleable Iron Co., Laconia

#### NEW JERSEY

Meeker Foundry Company, Newark 4

#### **NEW YORK**

Acme Steel & Mall. Iron Works, Buffalo 7 Frazer & Jones Company Division Eastern Malleable Iron Co., Solvay Oriskany Malleable Iron Co., Inc., Oriskany Westmoreland Mall. Iron Co., Westmoreland

American Malleable Castings Co., Marion Canton Malleable Iron Co., Canton 5 Central Fdry. Div., Gen. Motors, Defiance Dayton Mall. Iron Co., Ironton Div., Ironton Dayton Mall. Iron Co., Ohio Mall. Div., Columbus 1 Columbus 16 Maumee Malleable Castings Co., Toledo 5 National Mall, and Steel Castings Co., Cleveland 6

#### PENNSYLVANIA

Buck Iron Company, Inc., Philadelphia 22 Erie Malleable Iron Co., Erie Lancaster Malleable Castings Co., Lancaster Lehigh Foundries Company, Easton Meadville Malleable Iron Co., Meadville Pennsylvania Malleable Iron Corp., Lancaster

Texas Foundries, Inc., Lufkin

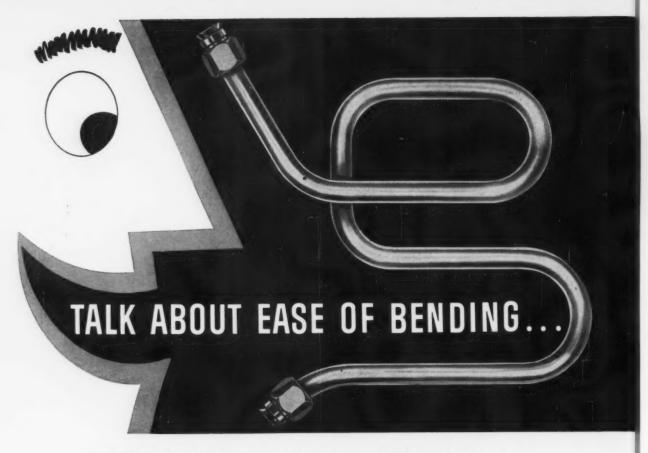
#### WEST VIRGINIA

West Virginia Mall. Iron Co., Point Pleasant

#### WISCONSIN

Belle City Malleable Iron Co., Racine Chain Belt Company, Milwaukee 1 Federal Malleable Company Inc., West Allis 14

Kirsh Foundry Inc., Beaver Dam Lakeside Maileable Castings Co., Racine Milwaukee Maileable & Grey Iron Works, Milwaukee 46



# YOU SHOULD TRY ELECTRUNITE

The <u>welded</u> hydraulic fluid line tubing that offers lower initial cost...appreciable savings in downtime

The reason...uniformity! ELECTRUNITE Hydraulic Fluid Line Tubing is made from bigh-grade, close-tolerance, flat-rolled steel. Checked for defects as only flat rolled steel can be checked. Then: carefully formed, welded, annealed, cold-worked, and annealed again into a tube of unsurpassed uniformity...a tube that is easier to bend, easier to flate...a tube that meets or exceeds the normal life of tubing produced by any other method.

All this plus the fact that ELECTRUNITE costs less to buy (in all sizes shown in the JIC Standards Book and in an even wider range of sizes produced to our specification HL-1). Savings in downtime reflect still greater cost reductions. In the history of ELECTRUNITE Hydraulic Fluid Line Tubing, no failure resulting from longitudinal or transverse cracks has been reported.

The big switch is on! Join the hundreds of equipment and machinery builders and their maintenance departments now using millions of feet of ELECTRUNITE Hydraulic Fluid Line Tubing. Mail the coupon for complete information, including a copy of specifications.

MEETS ALL REQUIREMENTS OF THE JIC STANDARD!

ELECTRUNITE® is available in all sizes shown in JIC Standards Book. Available in a wider range of sizes produced to our specification HL-1 (which meets all test requirements of the JIC standard).

# REPUBLIC

World's Widest Range of Standard Steels and



ENGINEERED FOR LONG LIFE, Republic Skid Boxes have corrugated construction, smooth double roll around top that eliminates sharp edges. Four-way fork entry, which simplifies handling, is available. Heavy-duty stacking brackets permit tiering to any practical height. For the latest materials handling ideas, consult Republic Materials Handling specialists. Send coupon.





WIRE PULLING IS UP TO 37% EASIER with Republic ELECTRUNITE E.M.T. Silverslick inside finish, developed by Republic, combines with exclusive "INSIDE-KNURLING" to offer greater wire pulling-pushing advantages and economies than ever before. "GUIDE-LINES"® and "INCH-MARKS"® are other big features that help make the best cost less installed! Ask your electrical distributor or mail coupon.

SPECIFY REPUBLIC STEEL WIRE for utmost uniformity that assures ease of forming as well as adequate strength and rigidity. Republic produces wire in a wide range of sizes, grades, and finishes. Republic metallurgical specialists will work with your personnel in solving design or production problems. Mail coupon for complete information.

# STEE

Steel Products



#### REPUBLIC STEEL CORPORATION DEPT. IA-8084 1441 REPUBLIC BUILDING - CLEVELAND 1, OHIO

Please send more information on:

☐ ELECTRUNITE Hydraulic Fluid Line Tubing, including a copy of specifications ☐ Republic Steel Wire a copy of specifications ☐ Republic Steel Wire ☐ Materials Handling Equipment ☐ ELECTRUNITE E.M.T.

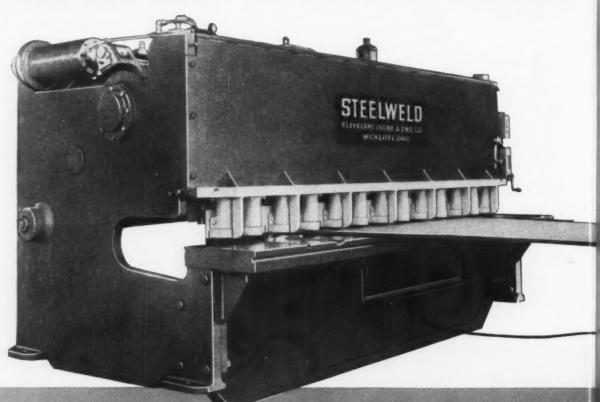
Name.

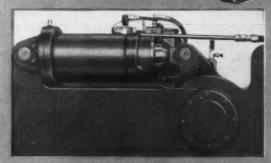
Company\_ Address

1959

Introducing a new line of

# STEELWELD Pivoted-Blade





#### RUGGED - SIMPLIFIED HYDRAULIC DRIVE

The drive is simplified and efficient. Only one hydraulic cylinder is used, as compared to two on other machines. Hydraulic components, therefore, are reduced by one-half. No special circuit is required to keep the blade level. This is taken care of by the mechanical linkage.

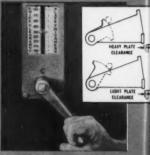
#### 2md SPEED FOR LIGHT CUTTING - 100% FASTER

The single cylinder design provides an Important bonus advantage: A second, higher speed for lighter thicknesses. Material up to and including 65% of the rated thickness is cut at double the downstroke full-load speed. The hydraulic circuit automatically changes to a slow speed full-load capacity when required.



#### **CUTTING STROKE** QUICKLY ADJUSTED

Both the upper and lower limits of blade travel can be adjusted to suit the work. With the same adjustment, the shear can be changed easily from aquaring to slitting operation, or to intermediate position for notching.



#### FAST KNIFE CLEARANCE ADJUSTMENT ASSURES BEST CUTS

Knife clearance can be adjusted to suit different plate thicknesses. This is quickly done by turning a hand crank at front of the machine. This causes the upper knife to move toward or away from the stationary knife, as indicated in sketches. The scale shows plate thickness that may be cut for any knife setting.

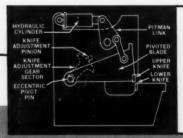
STEELWELD MACHINERY DIVISION . THE CLEVELAND CRANE & ENGINEERING CO. . 4860 E. 282 ST. . WICKLIFFE, ONIO

HYDRAULIC SHEARS

Offer a combination of features found in no other shear!

COMPLETE RANGE OF SIZES FOR CUTTING PLATE WIDTHS TO 30 FEET

... AND THICKNESSES TO 2 INCHES



#### PIVOTED-BLADE DESIGN

pivoted-blade cutting principle is used. It overcomes certain handicaps of guillotine type shears. There are no slides and guides to wear out of true and cause inaccuracies. The upper blade operates on two heavy pins secured to the end housings and travels in a circular path.

The Steelweld line of Hydraulic Shears is the newest in the Steelweld Machinery Division's fast growing family of metal forming and cutting machinery.

Entirely different from all other shears now on the market, the new machines have a machinery design that is unique and outstanding. They are replete with features that make metal cutting faster, easier and extremely accurate. Construction is heavy and of highest quality to provide long trouble-free service with minimum maintenance.

The hydraulic machines supplement the fine line of Steelweld mechanical shears, thereby making it possible to offer without partiality the most suitable machine for the work contemplated.



# and many more IMPORTANT ADVANTAGES

NO OVERLOAD DAMAGE—Steelweld Hydraulic Shears have uniform overload protection through the entire working stroke. LOW FIXED RAKE ANGLE - Minimizes twist, camber and bow in cut pieces. Extra heavy power drive eliminates need of adjustable rake angle.

VARIOUS CONTROL CYCLES—Inching control, safety stroke, single stroke repeat, and single stroke non-repeat are provided

SAFETY-TYPE FOOT SWITCH—Reduces fatigue and speeds operation. Can be moved around to most convenient location. QUIET HYDRAULIC HOLD-DOWNS—Positive in operation with adjustable pressure to suit work. Heavily protected from damage. EXTRA DEEP THROAT—24 inches standard. 36 inch throat

SMOOTH WORKING BACK GAUGE—Sturdily built for long SMOUTH WUNKING BACK GROUP—Standing built for long operated with hand crank. Motor drive available.

KNIVES EASILY REPLACED AND SET-One man can turn or completely replace knives and make all adjustments quickly from front of machine.

CONVENIENT POWER PACKAGE-Motor, pump, oil cooler, valves, etc., mounted on oil tank and readily accessible for maintenance. May be removed as a unit from machine. HYDRAULIC VALVES ON COMMON SUBPLATE—Eliminates considerable piping, fittings and bends. Provides an efficient, tighter, hydraulic system. Valves easily removed without disturbing piping.

959

# Name your load and speed combinations

We'll fit these bearings—or special types and sizes to your special needs.

Just fill in your application problem below—attach to your letterhead and mail.

THE SCHATZ MANUFACTURING COMPANY, Poughkeepsie, N. Y. Here's our bearing problem. What do you suggest?	OPERATING CONDITIONS		
	SPECIAL CONDITIONS		
APPLICATION.			
LOAD (radial, thrust or both)	Name		Tirle
SIZE	Company		
SPEED.	Address		
LIFE FACTOR	City	Zone	State

# Schatz makes the most varied line of Ball Bearings to fit your needs



# "Functional Precision" Ball Bearings—BR series

One piece race type with ball cage. Designed to give all the precision you require under certain ratios of load, speed and life expectancy. Available in open type, single or double shielded, single or double sealed with Schatz patented low friction plastic seal. Or with one shield and one seal on special order.

23 sizes from 3/16" to 1"—6 types in each size + specials

"Commercial" Ball Bearings-The most complete and varied line anywhere.

UNGROUND BALL BEARINGS "TYPE A"—Every standard type—radial, thrust and radial thrust.

GROUND BALL BEARINGS "TYPE B"—Used and recommended where greater accuracy and smoother running qualities are needed and where loads are heavier and speeds higher.

1033 sizes to match your Bearing Application Needs

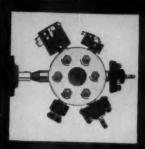




THE SCHATZ MANUFACTURING COMPANY · Poughkeepsie, New York

# Brown & Sharpe

PREGISION GENTER











ıls



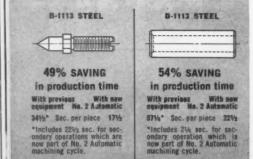


to help you make more for less...

# TO HELP YOU REDUCE SCREW MACHINE PRODUCTION COSTS



# Production records prove the new Brown & Sharpe Automatics pay off predicted savings - with a plus



Now, from plant after plant where the new B&S No. 2 Automatic Screw Machines are in the line, reports show that they not only deliver the promised advantage over old equipment, but often provide a substantial plus in extra savings. In many cases — one, two, and sometimes three secondary operations have been eliminated. The need for the extra machines is ended, and total man-hour savings run as high as 90%.

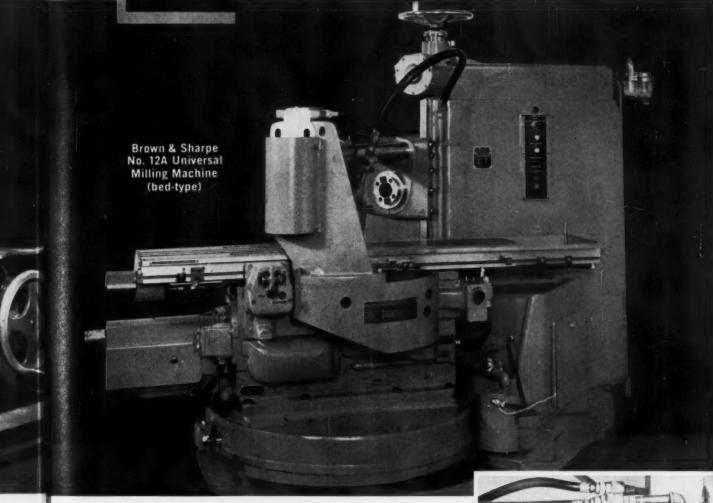
In addition, the new Automatics maintain specified tolerances as close as 0.0005", and meet the highest stand-

ards for surface quality.

With such proved production savings, buyers agree that the new Automatics "pay for themselves in record time." Find out how you can make comparable savings with the extra speed and precision — the extra adaptability for combined operations — the faster set-ups and extended tool life.

The No. 2 Automatic is made in 3 sizes — to take stock up to ¾", 1¼", and 1½" diameter. For complete details, write: Machine Tool Division, Brown & Sharpe Mfg. Co., Providence 1, Rhode Island.

TO HELP YOU MILL MORE FOR LESS



# NOW-helical milling with automatic production economy

The No. 12A Universal combines a unique swiveling base arrangement with the powerful cutting ability and automatic control features of the popular Brown & Sharpe bed-type milling machines. Developed for helical milling of cutters, drills, reamers, and similar work, it provides big savings in production costs over knee-type Universals designed for small-lot operations.

rpe us

n sav-

Auto-

record

make

extra

adapt-

- the

ol life.

de in 3

, 11/4",

mplete

ivision,

vidence

Control operations are automatic, freeing operator for other duties after work piece has been loaded and ma-chine started. Automatic operations include separation of cutter and work

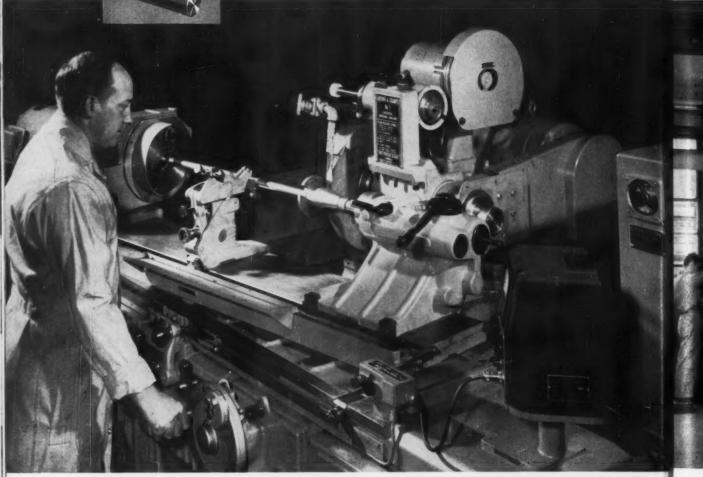
to provide necessary clearance required for the run back in helical milling.

Cutting feeds more than double those practical on knee-type machines have been used for work transferred to the No. 12A, and surface quality improved. The rugged bed-type construction and full bearing support of the table ways, and the rigid arbor support provide ideal conditions for the heaviest cutting loads.

For complete information on all the cost-saving advantages of the No. 12A Universal, write: Machine Tool Division, Brown & Sharpe Mfg. Co., Providence 1, Rhode Island.

Brown & Sharpe Pregision Genter

TO HELP YOU GRIND MORE FOR LESS



BROWN & SHARPE design for dependable grinding economy includes . . . Completely Universal Wheel Spindle Head on Turret — Set Diamond Wheel-truing Attachment for Internal Grinding — Power and Hand Cross Feed in Both Directions — Power Cross Feed Continuous to Finish Diameter Setting — Positive Stop for both Internal and External Grinding — ELECTRALIGN for Instant Table Alignment.

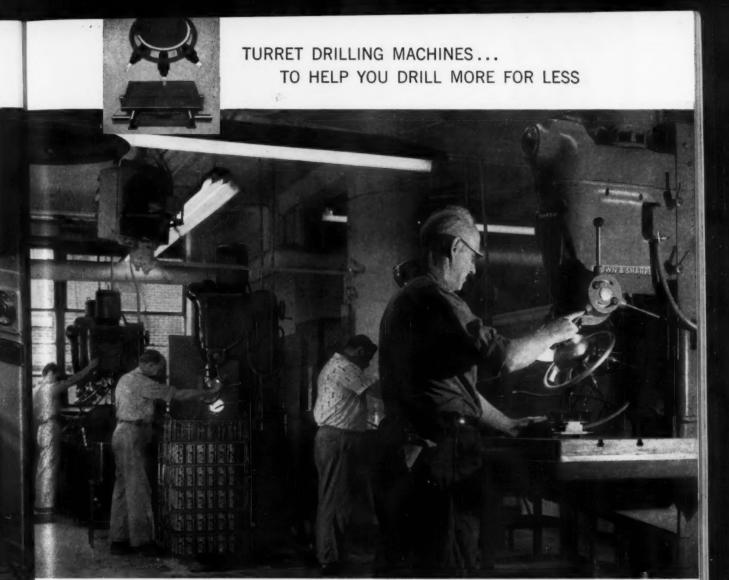
# Universals that deliver more grinding minutes per man-hour - save up to 75% in floor-to-floor time



Brown & Sharpe Universal Grinding Machines provide many exclusive advantages that simplify the operator's task, save set-up time, and speed up non-grinding motions. Job time saved often totals 75% or more.

Only Brown & Sharpe offers the ELECTRALIGN®, the original electronic indicator for swivel table alignment the only device that permits instant alignment to 10 millionths per inch of workpiece with a single setting. The operator is fully relieved of the need for calculations. No delay for repeated gaging and adjustment, and no scrap.

For top returns in cost-reduction, you need all the extra advantages of Brown & Sharpe design when you choose grinding machines for toolroom, prototype operations, or for production grinding. Why settle for less? Four machine sizes. For details, write: Machine Tool Division, Brown & Sharpe Mfg. Co., Providence 1, Rhode Island.



AT MINNEAPOLIS-HONEYWELL, BROWN INSTRUMENTS DIVISION, Philadelphia, six Model A B&S Turret Drilling Machines are used for a wide variety of drilling, tapping, boring, and reaming operations - permit 2 to 5 times faster production than with box-jig gang drill methods. In the typical part (below), the casting is cut away to show the 10-micro finish of the holes reamed at the top.

# Reaming to 10-micro finish with carbide tooling on Brown & Sharpe Turret Drilling Machines

Machining complex die castings of No. 13 aluminum for a Minneapolis-Honeywell industrial process instrument was a "tool-killer" when the conventional method of box jigs on gang drill presses was used. For combination reaming of 2-diameter holes cored in the casting, a carbide reamer was tried, but the percentage of rejects remained high, and a tool-life of only 100 pieces made tool costs prohibitive.

e

eed

ted

/OU

wn

nd-

ype

ng.

zes.

ool

Co.,

p.

The job was transferred to a Model A **B&S Turret Drilling Machine equipped** with a B&S Positioning Table and a simple work-holding device in place of the box jig. Using the same carbide reamer without guide bushings, rejects

were virtually eliminated, a 10-micro finish was consistently maintained, and tool-life increased to over 500 pieces.

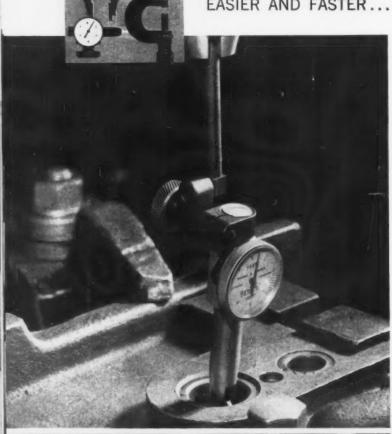
The B&S Turret Drilling method assures all conditions essential to successful use of carbide tooling - accurate work positioning, rigidity, proper spindle speed, easy chip removal, and ample coolant supply.

Find out how you can use Brown & Sharpe Turret Drilling to save handling time, set-up time, jig costs, capital investment, floor space and maintenance. Write for complete information. Brown & Sharpe Mfg. Co., Turret Drilling Machine Division, 20 Fitch St., East Norwalk, Conn.



Brown & Sharpe Pregision Genter

TO HELP YOU MAKE PRECISION MEASUREMENTS EASIER AND FASTER...





#### New B&S Rotary Magnet Chucks are powerful enough for turning operations

Brown & Sharpe's new rotary permanent magnet chucks are so powerful that you can actually use them for substantial cuts on lathes, boring, and other metalworking machines. They have 25% to 75% greater holding power than previous types — are lighter and thinner — have circular rings that help centering, too. Available in 4¾"-, 6½"-, 9"-, and 12"- diameter sizes. They are also ideal for grinding operations.

# Precision **Tool News**

Compact new test indicator works in tight places, reads in .0001"

You can take measurements in closer quarters with Brown & Sharpe's little 7027 "Bestest" dial test indicator. Its 1%16" long stem is only 3%"

And you'll get more accurate measurements, too. The 7027 has a fully-jeweled movement; the dial reads directly in ten thousandths; it is extremely repetitive.

Other features: Small lever reverses contact point direction at a touch; new friction adjustment compensates for wear of point bearings; chrome finish throughout; easy-to-read dial.

The B&S 7027 Bestest Indicator is available with .040", .080" and .120" contact points, plus accessories for use with all rigid-type B&S holding devices — or with .080" point and one bar only (for 12" Vernier Height Gages) - in a handsome hinged-cover wooden case.



#### **B&S Black Granite Thrift Surface** Plates available at new low cost

To get famous Brown & Sharpe Black Granite Surface Plates at lowest cost — choose from this no-ledge 'Thrift" line. You get surface accuracy of 100 millionths, in a low-cost plate that will outwear metal and ordinary granite plates. Stock sizes from 12" x 18" to 48" x 144" - Specials to suit any need. (Brown & Sharpe recently furnished one special that measured 6' x 16' in one piece.)

Call your B&S Distributor!

He's nearby . . . He can make prompt delivery of B&S tools from local stocks . . He's ready, willing and able to help you. Brown & Sharpe Mfg. Co., Providence I, Rhode Island.





By designing the shifter fork of his transmission to be forged, a manufacturer of earthmovers eliminated costly equipment breakdowns in the field because of fork failure. Factor of safety was increased even while weight and over-all costs were being decreased.

Parts scrapped because of voids uncovered after much high-cost machining are eliminated . . . forgings are naturally sound all the way through. Forgings start as better metal ... are further improved by the compacting hammer-blows or high-pressure of the forging process.

Design your parts to be forged . . . increase strength/weight ratio, reduce as-assembled cost, improve performance. Literature to help you design, specify, and procure forged parts is available on request.

When it's a vital part, design it to be FORGED



Drop Forging Association • Cleveland 13, Ohio

Names of sponsoring companies on request to this magazine

ht

rters 'dial

ents, nent; it is ntact ljustings; ıl. lable plus holde bar in a

face

urface

-ledge

0 milal and

18" to

own & asured

ost



# INCREASE FOUNDRY EFFICIENCY WITH SAND HANDLING AND CONDITIONING SYSTEMS

Jeffrey's experience in mechanizing foundry operations covers your specific operating conditions.

For example, in handling and conditioning sand, a complete system for handling sand from the molders' stations through pouring, shakeout, conditioning and back to the molders can pay off for the large-run foundry in a short time. Other foundries find a semi-continuous system, with its greater flexibility, more efficient. End result—greater efficiency, stepped up output in existing floor space.

Jeffrey starts with your basic requirements—engineers the right conveying and processing equipment, erects the equipment if desired. Consult Jeffrey for cost-cutting throughout your operations...Sand Handling and Conditioning Systems, Mold Preparation and Handling Equipment, Castings Handling Equipment, Special Unit Machines. For illustrated Catalog 911 write, The Jeffrey Manufacturing Company, 925 North Fourth St., Columbus 16, Ohio.



Sand conveying system uses Jeffrey idlers for minimum-maintenance service.



Time is saved by delivering sand directly to molders' stations.

CONVEYING • PROCESSING • MINING EQUIPMENT...TRANSMISSION
MACHINERY... CONTRACT MANUFACTURING



### Why you can't afford cheap BORE OF CU. FT. OF AIR NOZZLE PER MINUTE H.P. REQUIRED IN INCHES @ 80 LBS. TO MAINTAIN PER SQ. IN. PRESSURE nozzles. 191 34.76 225 40.95 260 47.32 299 54.42 340 61.88 430 78.26 532 96.82

The chart tells the story.

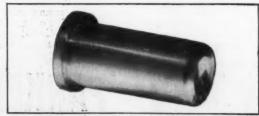
Any pressure blast nozzle which wears rapidly greatly increases your compressed air bill. For example, when you start with a ¾" bore nozzle at 80 lbs. blasting pressure, it will pass 191 cu. ft. of air per minute, requiring 34.76 H.P. However, when this nozzle has enlarged only ¾6" to ¾6" bore, you must supply 430 cu. ft. of air per minute to maintain the 80 lb. pressure. And you pay for 78.26 H.P. to develop this volume. And with ordinary nozzles, the difference between ¾" and ¾6" occurs in only a few hours, or when manufactured abrasives are used, this can happen in a matter of minutes!

Now contrast the minimum guaranteed life of Norton NORBIDE\* Pressure Blast Nozzles: 750 hours with silica sand . . . 1500 hours with steel shot or grit! Lined with light, tough Norton Boron Carbide — a compound exceeded in hardness only by the diamond — they maintain high-efficiency abrasive velocity economically throughout their life span.

Why blast away your profits with cheap nozzles? Get the most work out of both nozzle and air with NORBIDE Nozzles. Available with bores from ½" to ½"; lengths

up to 6". For details write Norton Company, Refractories Division, 211 New Bond Street, Worcester 6, Mass.

\*Trade-Mark Reg. U.S. Pat. Off. and Foreign Countries



NORBIDE Pressure Blast Nozzles cut air costs 10% to 20%.



REFRACTORIES

Engineered ... Prescribed

Making better products . . . to make your products better NORTON PRODUCTS: Abrailes • Created Abrasiles • Control Delta • • Cont



Photo courtesy LITHO-STRIP CORP.

# NOW-Your Product, too, can have the extra values of BONDERITE for Aluminum!

#### SPECIFY BONDERIZED AND PAINTED ALUMINUM STRIP

'Get the jump on your competitors by offering the well-known extra values of Bonderite for aluminum on your products.

If your production justifies it, install a Bonderite line; if you don't want to make the investment right now, specify BONDERIZED and painted stock from your supplier.

Bonderite on aluminum adds tremendously to

Bonderite on aluminum adds tremendously to the appearance and performance life of the paint finish. Paint is anchored so securely that stamped and roll formed products may be fabricated without chipping or peeling of the paint film or any loss of adhesion, even after most severe deformation.

of adhesion, even after most severe deformation.

To meet and beat competition, equip your products with recognized Bonderite sales appeals:

- Longer-lasting fine appearance.
   Positive corrosion control.
- 3. Increased paint durability.

More than 200 plants, of all sizes, are using Bonderite for aluminum today. Investigate for

Bonderite for aluminum meets and exceeds the requirements of Government Specification MIL-C-5541.



Salt River Valley Water Users Association, Phoenix, Arizona

# Saves \$699.00 per pump...

by using ground and polished



The men who operate the "Salt River" project have the job of supplying water to 240,000 acres of land in Arizona, where the Gila River joins the Salt River. The Association maintains some 250 deep well pumps to help supply the required water.

Richard Juetten, Supervisor of Salt River's Pump Division, reports that the use of La Salle FATIGUE-PROOF steel bars has permitted a saving of \$699.00 per pump . . . a potential saving of \$174,750 when applied to the 250 pumps now in operation.

Mr. Juetten's report follows:

"I have figured our direct saving realized by using La Salle fatigue-PROOF steel bars in place of standard C-1045 steel shaft in our deep well turbine pumps.

"FATIGUE-PROOF enables us to use bars only  $1^{11}/_{6}$ " in diameter . . . instead of  $2^{8}/_{6}$ " diameter shafts which were necessary when we used C-1045 . . . and this despite higher horse-power, more weight, and additional pump bowl assemblies.

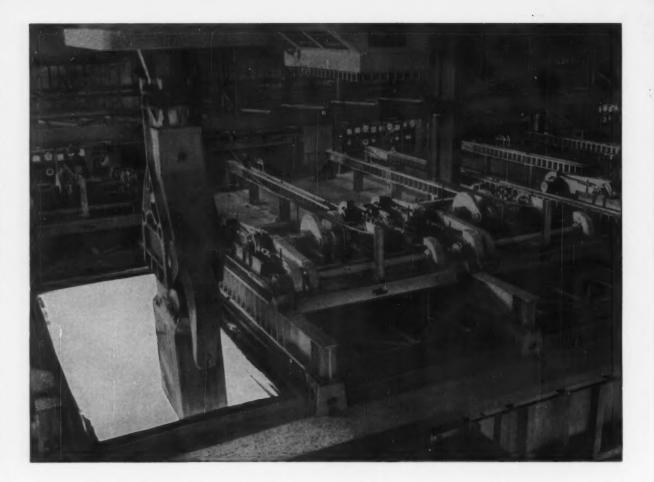
"Here are comparative costs per 10foot section (of a 300-foot pump shaft):"

# FATIGUE-PROOF ermits smaller FATIGUE-PROOF ermits smaller aring here FATIGUE-PROOF permits smaller haft housing FATIGUE-PROOF nermits smaller shaft coupling

using C-1045	using FATIGUE-PROOF
10' x 2-3/16" dia. shaft\$28.30 3½" shaft housing	10' x 1-11/16" dia. FATIGUE-PROOF. \$22.59 3" shaft housing
TOTAL cost\$81.48	TOTAL cost\$58.19
Cost per foot\$ 8.15	Cost per foot reduced to\$ 5.82

La Salle STEEL CO.

1436 150th Street Hammond, Indiana



# As more and more steel companies expand they specify SALEM Soaking Pits

When steel companies require new soaking pits to heat ingots for rolling, more and more they are specifying Salem. One steel company operating official recently said, "The previous installation heated more steel ingots ready for rolling with less fuel consumption, less maintenance cost and better temperature uniformity than any other type of pit in our plant, so we have again turned to Salem-Brosius." The recently completed pits shown above are good examples of Salem-Brosius' advanced design. They are of the

2-burner, single-end top-fired type, fitted with needle-type metallic recuperators and capable of placing 200 tons of steel under cover per pit.

Good performance reports are typical . . . not only concerning soaking pits, but all other Salem-Brosius heating and heat-treating furnaces. Salem-Brosius engineers are well known for their ability to design furnaces for maximum uniform output at minimum operating cost. If your plans call for replacing old furnaces or adding new ones, why not ask us to bid? There will be no obligation.



Salem Engineering Limited, Toronto, Ontario • Salem Engineering Co., Ltd., London & Milford, England • Salem-Brosius, S.A., Luxembourg • Salem-Brosius, S.A., Paris, France • Alloy Manufacturing Corp., Pittsburgh, Pennsylvania • R. H. Freitag Manufacturing Div., Akron, Ohio • General Ionics Corp., Pittsburgh, Pennsylvania



cast iron. Available with the latest NEMA Frame open protected or totally enclosed fan-cooled motors, they combine Wagner motor dependability with rugged, simplified gear units to give you speed reduction equipment designed for greater capacity and longer life in ordinary up to rough service.

Wagner Gearmotors offer a wide variety of sizes in single, double, triple or quadruple reductions, horizontal or vertical foot or flange mountings-speeds from 71/2 to 780 RPM. Write for Bulletin MU-227.

Whether you specify or apply power transmission equipment, your nearby Wagner Sales Engineer will be glad to help you select the right drive for your applications.





Improved lip type seals are used on horizontal shafts. On vertical output shafts, double mechanical seal with slinger and drain-off gives positive protection against leakage.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

#### Wagner Electric Corporation

6403 Plymouth Ave., St. Louis 14, Missouri.

SERVING 2 GREAT GROWTH INDUSTRIES ... ELECTRICAL ... AUTOMOTIVE



Now! Tests prove

### CONTOUR-WELDED\*STAINLESS TUBING

#### gives products better protection against contamination

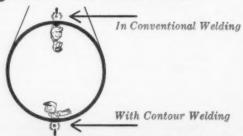
This tubing is smoother inside — so there's less danger of product incrustation. And this means better protection against contamination. Not only that, a smoother surface also ensures greater resistance to corrosion and longer fatigue life.

Here's why TRENTWELD® tubing, made by the exclusive Contour-Weld process, is smoother than any other tubing:
First, it's smoother than seamless tubing because it's formed

First, it's smoother than seamless tubing because it's formed from uniformly rolled strip steel, whereas seamless is extruded or pierced

Second, it's smoother than other welded tubing because the Trent-patented Contour-Weld process virtually eliminates the weld bead.

But get full details on why smoother tubing surfaces are vital. Send for the free 48-page "Trentweld Manual." It contains complete data on Contour-Welded tubing in stainless and high alloy steels, titanium, zircanium, zircalloy and Hastelloyt, in sizes from ½" to 40" O.D. Write: Trent Tube Company, Box 2518, Pittsburgh, Pa. Trademark Haynes Stellite Co.



In CONVENTIONAL WELDING of tubes, gravity pulls the molten metal down to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.

With CONTOUR-WELDING the tube is welded at the bottom. Gravity still pulls the molten metal down inside the tube, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.



stainless and high alloy pipe and tubing

TRENT TUBE COMPANY

Subsidiary of Crucible Steel Company of America . GENERAL OFFICES: East Troy, Wisc. . MILLS: East Troy, Wisc.; Fullerton, Calif.

if cost reduction is your problem

# Value

analysis

IONAL HTM CASTINGS



To make or buy - to cast, forge or fabricate — that is often the question.

Before you decide, look into the advantages of National HTM (pearlitic malleable) castings over other methods of forming.

Among the great advantages of National HTM castings are closer as-cast tolerances that often eliminate machining operations ... excellent response to subsequent hardening operations, either induction or flame . . . easy machinability on your present equipment . . . high ultimate strength . . . excellent non-seizing bearing qualities . . . air or liquid quenching . . . ability to be smooth-finished.

Yes, Value Analysis often makes the use of National HTM castings a must. And remember National HTM castings can be precision cast by the shell mold, CO<sub>2</sub> or green sand methods. Production costs tumble . . performance and salability of your product spurt - with National HTM (pearlitic malleable) castings.

AA-9358

#### NATIONAL MALLEABLE CASTINGS COMPANY

Established 1868

lina

1959

Cleveland 6, Ohio

The nation's largest independent producer of malleable and pearlitic malleable MEMBER

#### Important Physical Properties

Brinell	163 to 302 *	
Yield, psi	48,000 to 85,000°	
Ultimate, psi	70,000 to 110,000°	
Elongation, %	7 to 2*	

\*Depending upon grade

# exclusive features

The LANROLL Attachments offer certain features of design not generally found in Thread Rolling Tools of this type: (1) Disengaging the attachment from the shank for servicing and tooling changes without disturbing the original set-up (Figure 1), (2) Tipping avoids indexing interference on bar automatics having a limited tool slide movement (Figure 2), (3) A Gage quickly determines the precise position where the vertical centerlines of both the rolls and workpiece coincide (Figure 3).

The LANROLL Attachment (capable of producing straight or taper threads) is primarily for application to bar automatics, but may be applied very successfully to the cross slide of a lathe with power feed. Five sizes of the Attachment thread all diameters from #5 to 1-3/4" (1/16" to 1-1/4" pipe). For additional information, request Bulletin G-96.

#### LANDIS *Machine* COMPANY

WAY RESHORD . PERHSVIVANIA

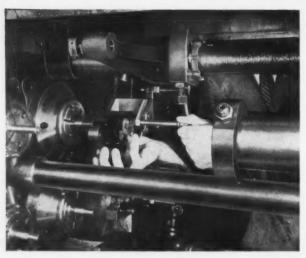


figure 1

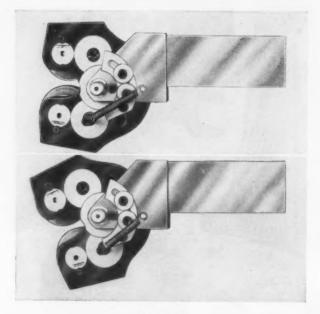


figure 2



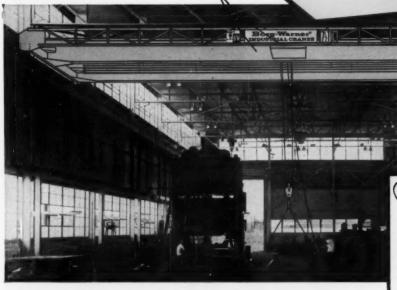
figure 3

Borg-Warner Industrial Cranes

Quality at a price you can afford...

\$990000

For a 71/2-Ton, 60 Ft. Span,
3 Motor, Top-Running Double Girder
Industrial Service Crane

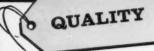


## Why Borg-Warner Industrial Cranes are BETTER VALUES

Value is determined by QUALITY and PRICE . . . and, a price like this for superior Borg-Warner Industrial Cranes construction and performance assures you of top value for your materials handling investment.

If you want to boost your production and operating profits by making full use of overhead space for materials handling...if you can use the extra storage space an overhead crane will provide as compared with fork-truck stacking ...if you can benefit from aisles and work areas cleared of floor-type handling equipment ...it will pay you to consider a Borg-Warner top-running, motor-driven crane like this. The cost may be far less than you had imagined. One crane owner thought it would cost him nearly four times this price to duplicate his crane.

Borg-Warner Industrial Cranes offers a complete line of overhead cranes . . . for light, medium or heavy service . . . constant or intermittent service at slow, medium or high speeds . . . operation from cab or floor. Get in touch with B-W Industrial Cranes today for answers to your materials handling problems.



- Full 7½ tons rating with ample reserve capacity
- · Heavy duty hoist
- Heavy duty steel wheels on bridge and trolley
- All welded jig bored and jig assembled end trucks
- Long life precision ball and roller bearings
- Large gusset plates at end trucks
- Outrigger machinery girder construction
- · Heavy duty gear reduction bridge drive
- · Fluid coupled bridge and trolley drives
- Full magnetic push button control
- Magnetic bridge brake



The crane illustrated is a typical double girder installation. For shorter spans, smaller capacities and lighter or intermittent duty Borg-Warner Industrial Cranes can supply your needs at even lower prices.



959

Design it better ...
Make it better.

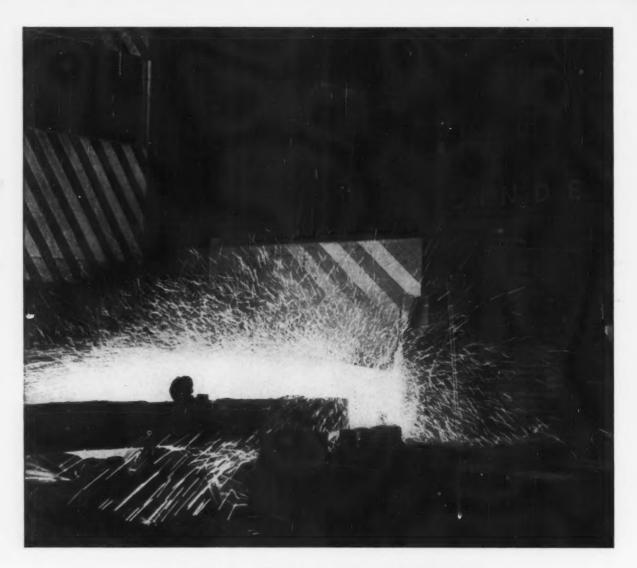


Distributors in all principal

Borg-Warner INDUSTRIAL CRANES

1510 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois



# LIN-DE-SURFACER MACHINE HOT-SCARFS 4.27 MILLION TONS IN 27 MONTHS

Weirton Steel Company, Division of National Steel Corporation, set the record. Of the 65 *Lin-de-Surfacer* machines serving steel plants throughout the world today, this is the champ—4.27 million tons in just 27 months.

Mechanized scarfing is the fastest, most economical way to upgrade surface quality. Your costs depend on your production because you lease the *Lin-de-Surfacer* machine on the basis of the tonnage it processes. It can be rolled on or off the production line in seconds. Scarfing speeds can reach 195 ft./min.

And-most important-savings over hand-conditioning methods are estimated conservatively at \$1.50 per ton-are often much higher.

"Linde," "Lin-de-Surfacer," and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

Linde Company—a leader in the production and distribution of oxygen and acetylene—pioneered the development of mechanized scarfing. To find out how hot-scarfing can help your operations, call the nearest Linde office. Or write Linde Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N.Y. In Canada: Linde Company, Division of Union Carbide Canada Limited.



Better products, faster, from your National Seal specialist:



# National "prescription-blends" a synthetic just right for your industrial oil seal application!



National Syntech Oil Seals feature: 1. Synthetics "prescription-blended" to meet specific operating conditions; 2. Minimum tension on garter spring to reduce shaft-torque, increase seal life; 3. Accurately sized O.D.'s.

### A National Syntech oil seal can be formulated to take specific conditions of temperature and shaft speed!

Temperature extremes, shaft speeds, solvent-, fatigue- and abrasion-resistance—these and other factors go into choosing the best synthetic for an industrial seal. National can "prescription-blend" a Syntech seal just right for any job!

Basic ingredients for synthetics developed and perfected by National are compounded by coded formulas. Each batch is mixed and blended separately, then tested and approved before release. A finished "prescription" is extruded, bonded and molded . . . machined to size and assembled into Syntech seals that'll save time and money day after day in your machines.

Whether you use synthetics or leather, you can get the industrial oil seal you need—when you need it—from your National Seal specialist. Call him today for fast service!

## NATIONAL OIL SEALS

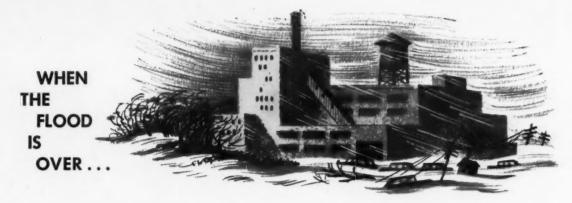
FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. . DETROIT 13, MICHIGAN



959





# the motors in this plant will run ... if they're LINCOLN MOTORS!



LINCOLN MOTORS HAVE PROTECTION WHERE IT'S NEEDED

—ON THE WINDINGS! Multiguard, a polyester resin, is extruded through and around the windings of the stator to form a rock-like, impenetrable mass. The stator of a Lincoln motor looks like a stone doughnut (see photo at left) and is just as tough. Water, oil, dust, acid, alkalies and just plain dirt can't get near the windings. The wires, themselves, are held rigid. They can't vibrate and wear off insulation.

BEARINGS ARE SUPER-PROTECTED, TOO. Double shields keep out contaminates. Grease reservoirs contain enough lubrication to last for years, yet the bearings are designed to resist over-lubrication. The bearings on this motor are designed to contribute to the long, trouble-free life that has been built into the motor with Multiguard protection.

**HOW GOOD?** For six years, Lincoln motors with Multiguard have been outperforming totally enclosed motors on torturous jobs.

How much? Lincoln motors cost no more than ordinary drip-proof motors— $20\,\%$  less than totally enclosed motors.

SIZES AND TYPES! One to 100 horsepower, AC, squirrel cage, polyphase motors.

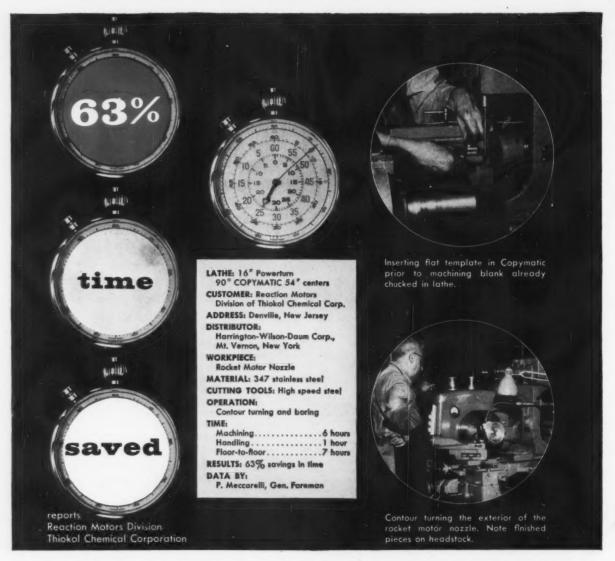
WHERE? Call your local Lincoln office. It's listed under Lincoln Electric in the "A to Z" list of manufacturers in Thomas Register, or in the Yellow Pages of your telephone directory.



THE LINCOLN ELECTRIC COMPANY

Department 1562 . Cleveland 17, Ohio

The world's leading manufacturer of arc welders and electrodes, AC motors and battery chargers.



by this Lodge & Shipley Powerturn Copymatic Lathe



A pioneer in jet propulsion, Reaction Motors Division of Thiokol Chemical Corp., Denville, N. J., plays an important part in America's rocket defense and space exploration programs. In turn, and in turning, a Lodge & Shipley POWERTURN COPY-MATIC plays an important part in rocket motor production.

In contour turning and boring a typical reaction motor nozzle, the COPYMATIC cuts 12 hours from the previous time, completing the job in 6 hours machine time and one hour handling time.

Whether you're machining the new and tougher alloys or the old stand-by metals, you'll appreciate the strength, rigidity and extra power available in Lodge & Shipley Lathes. For special jobs or routine operations, the speed and accuracy of these world famous lathes offers much to virtually any lathe user.

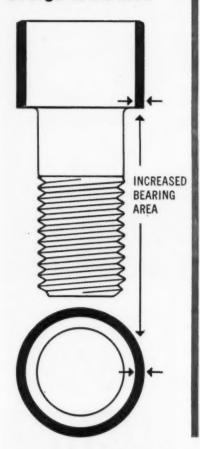
Investigate the time and money-saving possibilities of Lodge & Shipley COPYMATIC Lathes with 45° or 90° tracer slides. Contact your Lodge & Shipley representative or write for literature: The Lodge & Shipley Company, 3073 Colorain Ave., Cincinnati 25, Ohio

More than ever before, your LODGE-ical choice . . . Lodge & Shipley

#### A MAJOR DEVELOPMENT IN SOCKET CAP SCREW DESIGN!

UNBRAKO **pHd\*** with Hi-Life thread— the advanced fastener for the 60's

#### Stronger in the head



#### Stronger in the thread



Unbrako pHd design features increased bearing area under the head, bigger wrenching socket; provides up to 2½ times as much holding power without indenting bolted material. By permitting higher preloading, pHd helps eliminate fatigue failures, reduces possibility of screws working loose under shock and vibration.

New Unbrako Hi-Life thread form has smoothly radiused root, slightly more metal at minimum cross section. Result: up to 100% greater fatigue life, plus a bonus in added tensile strength. Only Unbrako gives you the new, larger pHd head design and the improved Hi-Life thread . . . in a standard screw at no extra cost.

#### INDUSTRIAL FASTENER Division

JENKINTOWN 17, PENNSYLVANIA



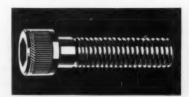
"pHd stands for "proper head design" - a factor in higher product reliability

today, SPS now offers you a standard socket head cap screw that incorporates both the Unbrako pHd design (1960 Series) and the new Unbrako Hi-Life thread.

Anticipating tomorrow's demands

This combination gives you a fastener that is unequaled in strength and performance. Because of its increased bearing area and bigger socket, you can tighten it tighter without deforming screw or bolted material. Thus you get more holding power—up to  $2\frac{1}{3}$  times as much, in fact. And because of both increased bearing area and new radiused thread root, the UNBRAKO pHd Hi-Life is almost twice as strong in fatigue.

The pHd head and Hi-Life thread -both originated by SPS-are tangible results of a continuing program of basic research in the désign and performance of threaded fasteners. And they reflect to no little degree SPS experience in developing special high-strength fasteners for aircraft/missile use. Nevertheless, this new UNBRAKO is available to you as a standardat no increase in price. For complete data, write SPS-manufacturer of precision threaded fasteners and allied products in many metals, including titanium.



New Unbrako pHd socket head cap screws with Hi-Life thread are available now from your authorized industrial distributor in standard sizes ¼ through 1 inch, plain or cadmium plated. Available also with the Nylok† self-locking feature. NOTE: Unbrako pHd Hi-Life screws fit standard tapped heles, require no special gazing.

†T.M. Reg. U.S. Pat. Off., The Nylok Corporation

# General Electric Announces Newest In The Complete Line Of Adjustable-Speed Drives

PARMATIC SPEED VARIATOR... newest in General Electric's complete line of packaged adjustable-speed drives... provides greater machine flexibility, better quality control, higher output and efficiency.

# STATIC POWER

for less maintenance, less downtime, added profit. New excitation and power conversion systems have no rotating parts. Sealed silicon rectifiers and saturable reactors need no warm-up, virtually eliminate power unit maintenance.

# 25% SMALLER

for easier installation. Reliable, long-life G-E components are factory assembled in compact, space-saving power unit, wired and tested before installation to assure accurate control, reduced installation time and expense.

# 50% LIGHTER

for lower shipping and handling costs. New Speed Variator meets industry's demand for lighter, more powerful drives—packs more power, weighs 50% less than other drives of comparable rating, 2000 lbs less in 100-hp ratings.

STATIC EXCITER with silicon rectifiers for motor field excitation and control power.

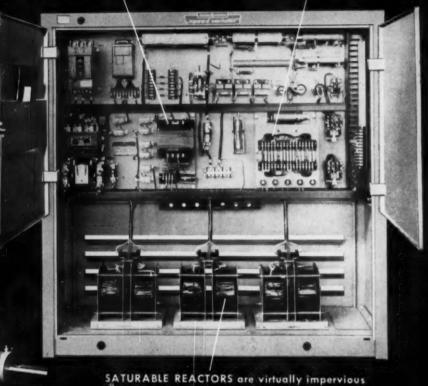
AMPLISTAT REGULATOR with adjustable acceleration and deceleration.



OPERATOR'S CON-

KINAMATIC D-C





# FIELD PROVEN

by two years' impressive onthe-job performance in several hundred installations in 15 industries. Experience indicates high operating efficiency, lower cost installation and maintenance for a greater return on your investment.

han-

Vari-

mand

erful

ower,

other

ating,

tings.

1959

 GOOD SPEED REGULATION: 5% with 100% load variation. Closer regulation available with modification.

to moisture and dirt, require no maintenance.

- WIDE SPEED RANGE: Standard Parmatic Speed Variator provides 8 to 1 range or wider if required.
- RESISTS CONTAMINATION: Saturable reactors and hermetically sealed rectifiers resist dirt and moisture.
- QUIET AND VIBRATIONLESS: New power unit design eliminates noise and vibration—expands drive versatility.

Limitations: G-E Kinamatic Speed Variator with motorgenerator set is recommended for applications requiring power absorption for stopping or overhauling loads. For more information, call your General Electric Sales Engineer, or write for GEA-7012, Section 821-1, General Electric Company, Direct Current Motor and Generator Department, 3001 East Lake Road, Erie, Pennsylvania.

GENERAL



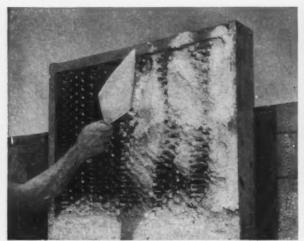
ELECTRIC



Casting furnace linings in place can be speedily accomplished with any B&W Refractory Castable. Here, tough, erosion-resistant B&W Kaocrete-D is cast in a lining that will be ready for service soon after installation.



Gunning B&W Kromight-Gun assures complete penetration of irregular areas. This 3200 F refractory material is excellent for studded open hearth doors and similar metalworking installations.



Slap trowelling can be the most effective way of forming a vertical or overhanging section of lining, provided the castable has an exceptionally adhesive, plastic texture. B&W Kaocrete-B, possessing these properties, is widely used in this type of installation.



Vibrating B&W Kaccrete-32 in place to form electrode rings in an electric furnace. This method of installation provides density and strength, and eliminates laminations, air bubbles and pockets, thus permitting economical, long life.

#### How B&W refractory castables solve



problems

Installing refractory linings quickly and inexpensively is a major concern of furnace builders and operators. Each of the many different types of metal working furnaces presents its own particular installation problems. To meet these widely differing conditions, B&W offers not just one, but a range of specialized refractory castables. Each is engineered to provide savings in installation time. Specialized B&W Refractory Castables save money by eliminating the

need for costly inventories of special shapes. The use of castables speeds up new construction and repair jobs and permits simplified, improved furnace design together with long life—in short, superior performance over a wide range of furnace operating conditions.

B&W Bulletin R-35A gives additional information on versatile B&W refractory castables. Write for copy to The Babcock & Wilcox Company, 161 East 42nd Street, New York 17, N. Y.



THE BABCOCK & WILCOX COMPANY

#### REFRACTORIES DIVISION

B&W Firebrick, Insulating Firebrick, and Refractory Castables, Plastics, Ramming Mixes, Mortars, and Ceramic Fiber.



# HANDY & HARMAN SILVER BRAZING Permits Manufacturer to Guarantee Underwater Air Regulator For Life

Perhaps the most vital component of a skin diver's equipment, this Viking Air Regulator, manufactured by Christensen Tool & Engineering Company, Norwalk, Connecticut, is structurally guaranteed for life. It must, under all conditions, be absolutely leaktight. The manufacturer's guarantee is a relatively recent achievement—through the high-strength help of silver alloy brazing with Handy & Harman EASY-FLO 45 and HANDY FLUX.

Over and above the unreserved dependability of brazed joints, the brazing method itself has saved the company considerable time, money and material in the production of the Viking Air Regulator. Brazing's simplicity is interestingly illustrated in this case by this company's require-

ment that assemblers and testers of the Viking must be skin divers themselves.

Almost invariably, silver brazing effects economies and brings advantages to whatever part, product or assembly it is applied. True, air regulators are few and far between, but the point is that they are metal products, made of a number of different metal components.

And that's the phrase that covers brazing's great adaptability. To give you a good idea of how you can put brazing to work, we'd like to send you Bulletin 20—it covers the basics of brazing and it may very easily solve your metal-joining problems. Handy & Harman, 82 Fulton Street, New York 38, N. Y.

## Here, in "serial" form is how the guarantee is "brazed" into the Viking:



1. TANK HOUSING—Initially, this component was mechanically joined and made "airtight" by means of sealants. Now, brazing eliminates 8 holes, 4-tapping operations, 4 screws and 3 assembly operations.



5. Shown here are the finished Viking components before and after assembling.

—Brazing by Specialty Brazing Laboratories, Riverside, Connecticut.



3. YOKE—This is assembled from stampings instead of castings, which were previously used. With brazing, no secondary finishing operations are required. Further, the part is stronger and lighter, and savings on material and labor on this component alone add up to 28%.



Your No. 1 Source of Supply and Authority on Brazing Alloys

2. FORK ASSEMBLY—There are five separate brazed joints, done with hand torch and hand-fed wire. Brazing eliminates one tapped hole, a lock washer and a spacer, plus the fact that positive alignment is now guaranteed.

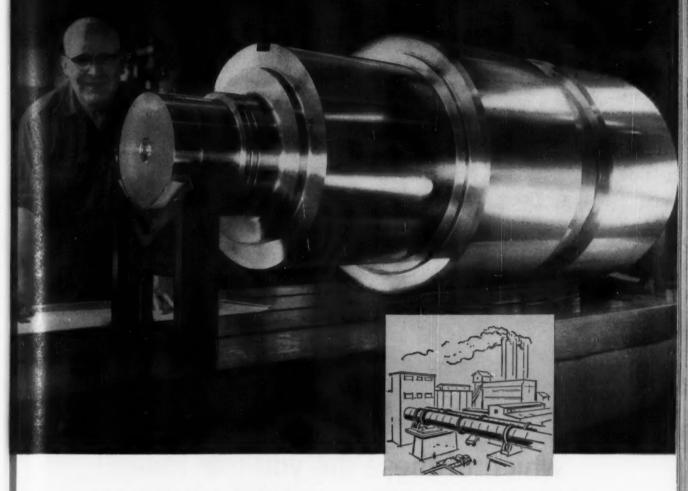


General Offices: 82 Fulton St., New York 38, N. Y.

DISTRIBUTORS IN PRINCIPAL CITIES

4. PISTON—This is the most important single element of the Viking. It regulates flow of oxygen from cylinder to mouthpiece; from 300 lbs. pressure to normal breathing. Without brazing, this part could not be made.

## Back of a Sack of Cement... This $4\frac{1}{2}$ Ton Steel Forging



Give a thought to this the next time you drive a concrete highway or see a concrete block building. Only 8900 pounds of what it takes to make a sack of cement . . . a relatively small forged steel pinion shaft to drive cement mill machinery.

be

bly en,

ptput —it

om

iich

ing, are

ger

rial

porlinlbs. ith-

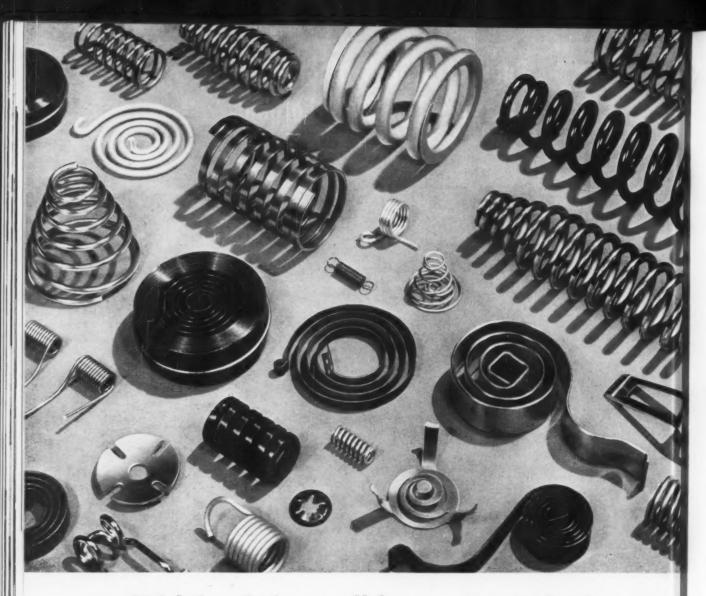
959

The large diameter is only 32 inches and the length only 8 feet—but it's a tough, dependable component of a vast manufacturing complex—the cement mill. The smooth, bright finish is comparable to the gleaming surface of a 60 ton turbine rotor. Why?...Because the same careful metallurgical control, skillful engineering and precision production accorded the largest forgings we make are characteristic of this relatively small steel forging.

Place with us your simplest or most intricate forged steel components of any size or shape—you will like the results you get.

**ERIE FORGE & STEEL CORPORATION** 

ERIE, PENNSYLVANIA



## Which of these did you use today?

Alarm wake you this morning? Stove timer work all right? Did you drive to work . . . take a business trip by air . . . press a light switch . . . use a dictating machine . . . or home workshop motor? Then you, or someone in your home or business, used a spring. With a product-mix like this it's practically certain that we enter your daily living, tucked anonymously away in nationally known and respected brands of all sorts of articles.

Write for a copy of "How to Solve Your Spring Design Problems" to learn how early consultation with the spring manufacturer results in improved design and performance.



Raymond Manufacturing Division, Corry, Penna.

Cleveland Sales Office, Cleveland, Ohio

Seaboard Pacific Division, Gardena, Calif.

58

#### **Associated Spring Corporation**

General Offices: Bristol, Connecticut

Wallace Barnes Division, Bristol, Conn. and Syracuse, N. Y. Gibson Division, Mattoon, Iil.

Chicago Sales Office, Chicago, III.

Milwaukee Division, Milwaukee, Wis.

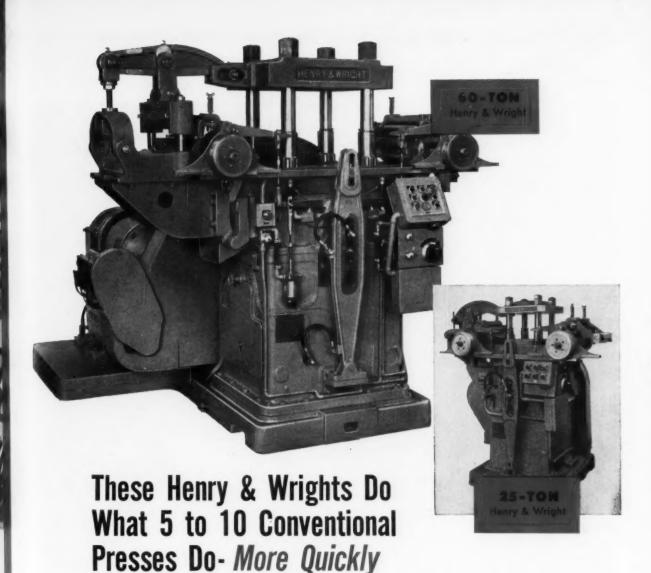
Ohio Division, Dayton, Ohio

Wis. San Francisco Sales Office, Saratoga, Calif.

\*\*Tubsidiaries—Wallace Barnes Co., Ltd., Hamilton, Ont. and Montreal, Que.

B-G-R Division, Plymouth and Ann Arbor, Mich. F. N. Manross and Sons Division, Bristol, Conn. Dunbar Brothers Division, Bristol, Conn. Wallace Barnes Steel Division, Bristol, Conn.

Associated Spring of Puerto Rico, Inc., Carolina, P.R.
THE IRON AGE, December 17, 1959



Over 3000 Henry & Wright Dieing Machines in service today, attest to the popularity of one of our earliest forms of automation. They were born to the mass production industry almost before it started. Every model employs the same basic design principles. A low center of gravity with all driving elements below the die bed assures stability for high speed operation. Precision alignment is provided by the long guiding surfaces; a pulling stroke rather than a pushing force gives better control; angular thrust of crankshaft is absorbed by lower crosshead instead of by slide

or punch. These and many other features assure maximum die life, at higher speeds, with more profit for you.

These high production units can replace the work of several conventional presses cutting labor costs proportionately. Modern progressive dies can produce virtually any shape, with any material, simpler and faster. Let H-P-M engineers adapt Henry & Wrights to your next mass production problem. Take advantage of less operating cost, reduced amount of floor space required, greater production output.

#### THE HYDRAULIC PRESS MANUFACTURING COMPANY

A Division of Koehring Company . Mount Gilead, Ohio, U.S.A.



5804

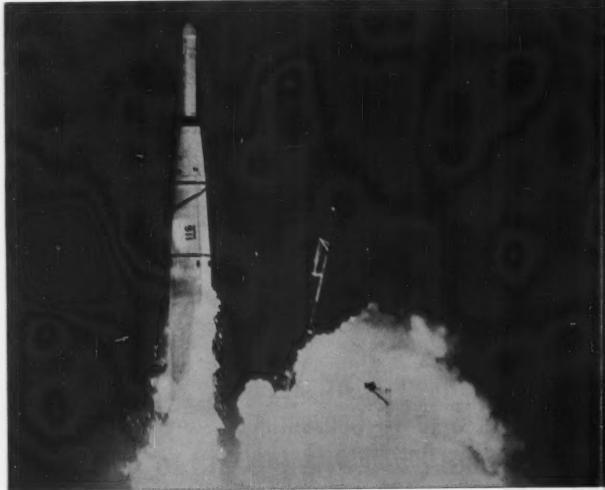
cut

Mich.



#### metal cleaning report no. 4

case histories from your distributor of Dow solvents



# MISSILE COMPONENTS... no place for "almost clean"

An aircraft parts manufacturer, under sub-contract to deliver missile components, had a serious production problem. His regular vapor-degreasing solvent gave results which, at best, were not quite good enough for certain critical missile parts. As a result of a consultation with his distributor of Dow solvents, this manufacturer put NEU-TRI® to work . . . now his missile components and his standard line of aircraft parts come off the line thoroughly cleaned. He also gained a cost advantage: a long-lived neutral stabilizing system built into NEU-TRI prevents early solvent breakdown. Consequently he now can clean more parts with a gallon of solvent than ever before!

THE IRON AGE, December 17, 1959

The

must parts. dling final

1-trick

Team ing m Dow solver clean

Comp

pletel

and a

packa

THE



#### ELECTRICAL PARTS

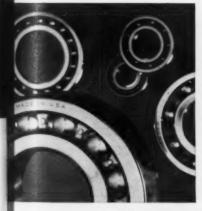
The bottleneck was tape. This company makes electrical parts. During one stage of assembly, masking tape must be applied to certain critical parts. And the time and careful handling required to remove the tape at final assembly provided a real production bottleneck! They found the answer with Chlorothene® (Dow 1, 1, 1-trichloroethane, inhibited). Because of its high solvent power, Chlorothene takes tape off fast.

#### **ELECTRONIC COMPONENTS**

Choice of spray or wipe—This manufacturer of electronic parts states: "Chlorothene is the finest all-around solvent we've ever used." Chlorothene is widely used throughout the plant for both spray and wipe cleaning of the electronic parts, and for cleaning of production equipment! There's no fire or flash point by standard testing methods, and toxicity is very low, which keeps this safety-conscious management happy.

There's no doubt about efficiency in metal cleaning operations when one or more of the Dow metal cleaning solvents is on the job. Dow offers industry the widest line of chlorinated solvents, each one designed for specific applications and purposes. There's a Dow solvent to meet every solvent-cleaning need . . . one which will do the job efficiently, in short order!

Your distributor of Dow solvents is fully qualified to assist and advise you when problems of metal cleaning arise. Why not take advantage of the wide experience and knowledge which he and his staff have to offer? A call to him may be a shortcut to more efficient, economical metal cleaning in your plant.



#### BALL BEARINGS

us

of

is

e:

n-

59

Teamwork for protection—This bearing manufacturer found nonflammable Dow perchloroethylene an ideal solvent for use in a combination cleaning-and-oil-bath formulation. Completed ball-and-race assemblies, dipped in the solution, came out completely free of all dirt and contaminants deposited during manufacture and assembly . . . while retaining a thin film of oil for protection during packaging and storage.



#### GAS EQUIPMENT

Solvent cleans-and-goes in a hurry—Cleaning of compressed gas tubes and lines can be a problem, but this company does the job the easy way. On the recommendation of their distributor of Dow solvents, they tried Dow methylene chloride. Its high solvency quickly, thoroughly removes grease, oil and other processing residue . . . and any solvent remaining after treatment evaporates in a hurry!



FREE . . .
TECHNICAL SERVICE
on 24-hour notice

Your distributor of Dow solvents will gladly help you with any problems you're experiencing with metal cleaning solvents. He lihave a trained solvents specialist en route to your plant within 24 hours after your call is received.

Ask your distributor of Dow solvents for details.

THE DOW CHEMICAL COMPANY

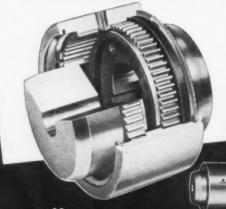
CHLOROTHENE®
TRICHLOROETHYLENE
PERCHLOROETHYLENE
METHYLENE CHLORIDE

See Your Distributor of Dow Solvents First!



GEAR COUPLINGS

# smaller stronger simpler



#### smaller

Sier-Bath has done away with undesirable weight and inertia by eliminating flanges ... reducing size as much as 40 percent and cutting weight to half that of flanged types. Such savings in size mean considerably lower cost!

#### stronger

More horsepower can be transmitted through the one-piece sleeve of the Sier-Bath Coupling than through flanges and bolts, Precision made, smaller gear teeth offer better load distribution. No steel castings are used on Sier-Bath couplings!

#### simpler

There are only seven parts to the Sier-Bath coupling. It can be assembled or dis-assembled in seconds. Sier-Bath Couplings won't "freeze-up" in corrosive service, even after years of use. Simplicity in design means lower cost to you.



Send for Sier-Bath's general Catalog C-5, and Bulletin N-1 on Nyflex Couplings.

FLEXIBLE COUPLING DIVISION

Member A.G.M.A.

9243 HUDSON BLVD., NORTH BERGEN, N.J.

## **KEEPS** COSTLY **EQUIPMENT OPERATING**

To reduce down-time of costly equipment -change to NON-FLUID OIL. It protects highly finished ball and roller bearings from failure due to acids in most greases. NON-FLUID OIL provides a constant film and perfect lubricating seal to exclude dirt and moisture. It gives added life for antifriction bearings because it "stays alive longer" than ordinary greases, lubricating effectively until entirely consumed.

Used or approved by most bearing manufacturers, NON-FLUID OIL is available in specific grades for every type of equipment. Write now for free, on-the-job testing sample and Bulletin No. 506.

#### **NEW YORK & NEW JERSEY** LUBRICANT COMPANY

292 Madison Ave., New York 17, N. Y. Works: Newark, N. J.

#### Warehouses

Birmingham, Ala. Atlanta, Ga. Columbus, Ga. Charlotte, N.C.

Greenville, S.C. Chicago, III. Springfield, Mass.

Greensboro, N.C. Detroit, Mich. Providence, R.I. St. Louis, Mo.

Also represented in principal industrial centers, including Pittsburgh, Pa., Cleveland and Cincinnati, Ohio.

NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture. So-called grease imitations of NON-FLUID OIL often prove dangerous and costly.



Change hats , with your maintenance man . . .



You'll find out . . .

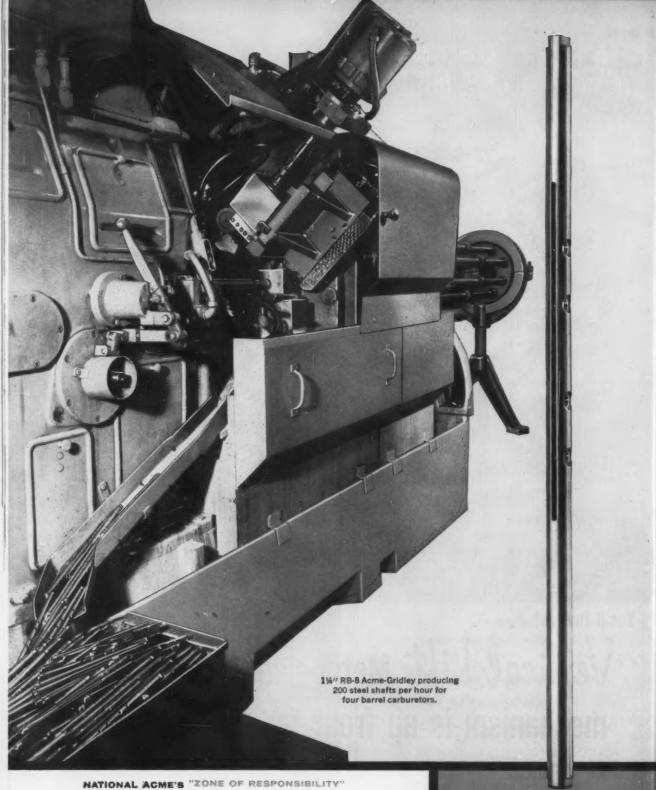
# Vertical Lift Metal-clad Switchgear's mechanism is up front for easy access

Change places for a moment with the man who maintains your metal-clad switchgear. You'll probably discover you prefer—as he does—to work with General Electric Vertical Lift Metal-clad.

One big reason . . . Vertical Lift is the only metalclad which has the breaker operating mechanism right up front where it's easy to get at. Unlike designs which locate the mechanism under the contacts, the G-E mechanism can be exposed for inspection in less than a minute. Vertical Lift saves your maintenance crews time, saves your company money. General Electric Company, Schenectady 5, New York.

Progress Is Our Most Important Product

GENERAL ELECTRIC



#### INCLUDES ALL PHASES OF COST REDUCTION

Check YOURS . . . Then Check National Acme

Direct Costs: these include direct dollar savings as realized by Carter Carburetor ... an "every day" job for Acme-Gridleys.

Indirect Costs: effecting important savings in maintenance, downtime, scrap reduction, tool costs, etc.

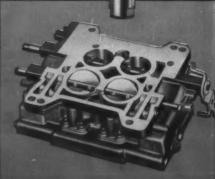
Product Redesign: teaming with your design group to take full advantage of Acme-Gridleys' cost reducing capabilities.

Direct Material Costs: our engineers provide important savings in this area by

constantly matching machines and tools to modern metallurgical problems.

Make-or-Buy Reviews: in many cases our Contract Division can assume your produc-tion headaches and relieve you of immediate

Spot Modernization: pioneering in modern tooling methods, and the flexibility of Acme-Gridleys can provide many "on-the-spot" savings.



Versatile Acme-Gridley produces

# **EIGHT DIFFERENT PARTS**

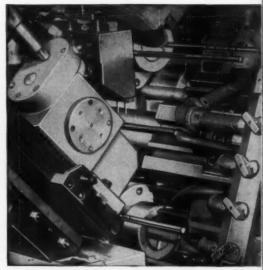
With Only Minor Changes in Tooling Setup

For Carter Carburetor division of ACF Industries, Inc.

Here's machine tool versatility at its best . . . versatility that provides documented cost savings for Carter Carburetor year in and year out. Machine investment and cost-per-piece are greatly reduced. Illustrated is but one example.

The spindles of a standard 1¼" RB-8 spindle Acme-Gridley bar automatic were locked against rotation with a simple spindle locking device. Each spindle functioned as a work holder when the machine indexed from position to position. The inherent accuracy of Acme-Gridleys assured precise alignment of the work with the standard and special attachments... whether it's the first or last piece in the run. When spindle rotation is desired, the locking device is simply removed and replaced by the spindle drive gear.

Check the industry's most modern approach to tangible cost reduction. Call, write or wire today!

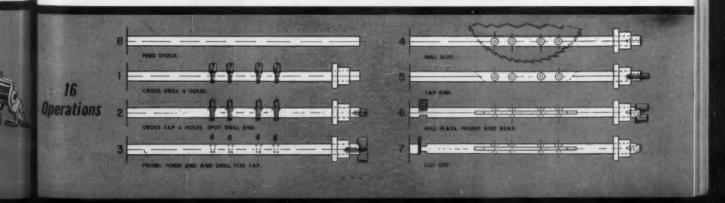


Close-up of tooling zone showing milling of slot in 4th position.



National
THE NATIONAL
ACME COMPANY
175 E. 131st STREET
CLEVELAND 8, OHIO

Sales Offices: Newark 2, N.J.; Chicago 6, Ill.; Detroit 27, Mich.



Jim Viall and Ray Baker of Benjamin Wolff and Company looking through Penmetal catalog for an approprite expanded metal mesh to recommend for installation.

### Are you getting this kind of service on

# **EXPANDED METAL?**







When you order expanded metal from Benjamin Wolff and Company in Chicago, you get what you ordered and more: personal attention from specialists who make your problem their own.

That fact was demonstrated recently when expanded metal for a Milwaukee department store was quickly supplied from the vast stocks on hand at this *Steel Service Center*. Furthermore, Benjamin Wolff representatives assisted in the selection of the right mesh for the job... and followed the job through to finished installation.

Willingness to please, as exhibited by Benjamin Wolff and Company, is characteristic of Penn Metal expanded metal distributors. It is but one of many reasons to examine the type of service you are presently getting on expanded metal.

#### PENN METAL COMPANY, INC.

Expanded Metal Sales Office: P.O. Box 1460, Parkersburg, W. Va.

Executive Offices: 40 Central Street, Boston 9, Mass.

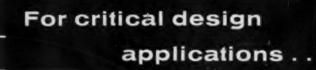
Plant: Parkersburg, W. Va.

District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago, Detroit,
Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg, St. Louis.
PM-230





Jim Viall checking finished expanded metal installation.





#### Compare!

#### TYPICAL TRANSVERSE TENSILE PROPERTIES

(8" square billet of Dynaflex)

Property	Mid-Radius		Center	
	Air Melt	Vac-Arc	Air Melt	Vac-Arc
Tensile Strength (psi)	285,000	287,000	285,000	285,000
Yield Strength .2% (psi)	250,000	252,500	245,000	250,000
Elongation %	4	8	2.5	8
Reduction of Area %	10	25	3	24

#### VAC-ARC

Grades Available . . .

rior mechanical properties.

Latrobe's know-how

guarantees reliability

Production know-how gained in making highest quality tool and die steels gives Latrobe an advantage in producing VAC-ARC (consumable vacuum melted) steels to meet critical design requirements. VAC-ARC Steels possess unusual cleanliness, improved ingot structure, and supe-

APPLICATION	TYPE	GRADE NAME	
High Temperature	A-286	Pandex	
Bearings	M-50	MV-1	
	52100	Regent	
Aircraft & Missile	H-11	Dynaflex	

Call your Latrobe representative . . . or write for literature.

Metalmasters



BRANCH OFFICES and WAREHOUSES:

BOSTON . BUFFALO . CHICAGO . CLEVELAND . DAYTON . DETROIT HARTFORD . LOS ANGELES . MIAMI . MILWAUKEE . NEW YORK PHILADELPHIA . PITTSBURGH . SAN LEANDRO . TOLEDO

\*Latrobe's Trade Name for Vacuum Consumable Electrode Melting



# Diluted cutting oil shortens tool life drastically

Lubricating oil is probably leaking into the cutting oil sumps of your automatic screw machines as you read this. Current research proves that this is happening in 70% of all the automatics in use today! And where it happens, it shortens tool life by as much as 50%—even 70%. On top of this, the cost of extra regrinds, lost production during tool changes, and excessive scrap production is putting a premium on screw machine operation in too many shops.

Look for these symptoms. One sure sign of dilution is the need for frequent refilling of the lube oil sump. If you are using an ordinary lube oil, this dilution will create two additional—and more costly—symptoms: excessive scrap production and frequent regrinds. Now you can eliminate these forever with the

#### TEXACO CLEARTEX CURE

The exceptional chemical stability and load-carrying ability of Texaco's Cleartex series make them equally suitable for use as cutting oils, lubricants or hydraulic fluids. All you have to do is use them for both cutting and lubrication. With Cleartex in all your sumps, you'll find cutting oil dilution will stop and screw machine production cost will drop substantially.

Write today for your copy of Texaco's helpful new booklet "Cleartex in Automatic Screw Machines"... and contact your local Texaco Lubrication Engineer for an authoritation of representations.

authoritative survey of your automatics. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write Texaco Inc., 135 East 42nd Street, New York 17, N. Y., Dept. IA-FM-24.



Tune In: Texaco Huntley-Brinkley Report, Mon.-Fri.-NBC-TV



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

for complete flexibility in rapid
automatic

the NEW R r.a.f. screw driver by Ingersoll-Rand

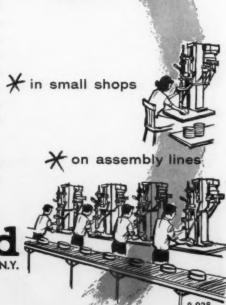
You get complete flexibility by moving, adding or removing powerheads—by varying screw types or sizes—or by adjusting power ranges to meet different torque requirements.

Now you can automate your fastening operations without buying expensive, custom-built fastening equipment. With the versatile, new R.A.F. Screw Driver, you can run one job in the morning, and a completely different job after lunch. Changing the screw pattern is as simple as loosening and then tightening two powerhead bolts.

#### dividends on payroll dollars

Using the new R.A.F. Screw Driver, one man can outperform a half dozen operators using conventional hand held screw drivers. As an example of savings possible with Rapid Automatic Fastening, multiply the yearly wage you pay one operator by the number of operators the R.A.F. Screw Driver replaces. This figure, minus the cost of the R.A.F. Screw Driver, represents your Dividend on Payroll Dollars for the first year alone.

For the full story on Dividend Dollars with Rapid Automatic Fastening, call your local Ingersoll-Rand office today, or write for Bulletin 5266.

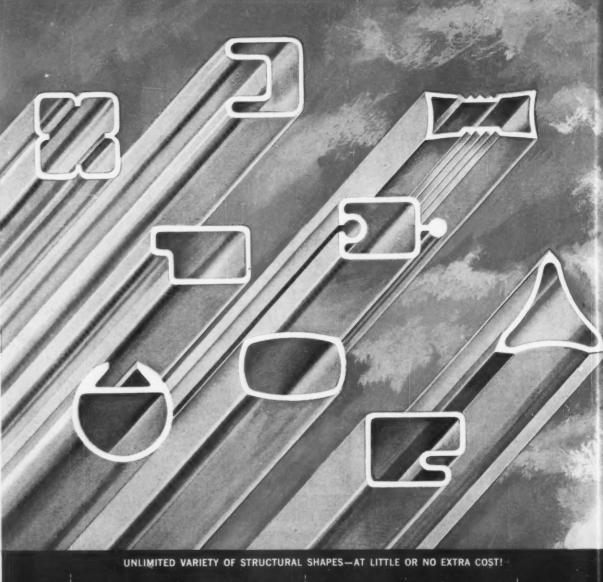




Ingersoll-Rand

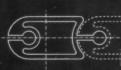
Tools plus AlRengineering increase output per man

Ingersoll-Ran





Inlaid (decorative or rubbing) strip



Interlocking features



Modular design concepts



Stitchless (garden chair) covering



Smooth (roll-slide) animation

No longer need you use costly, difficultto-extrude alloys when you want
distinctive styling. New Alcan TubeAlloy gives you the design freedom
of structural alloys...yet costs no
more than alloys that need
drawing for required strength.

# The first aluminum alloy ever developed expressly for furniture applications

New ALCAN TUBE-ALLOY lets you design tubing to any extrudable shape and design ... eliminates the drawing process and its design limitations

No longer need furniture designs (either functional or decorative) be limited by the drawing process!

For, unlike alloys commonly used for furniture tubing, new Alcan Tube-Alloy needs no drawing to develop required strength. In fact, heat treating alone gives it substantially greater strength than AA-6063 (Alcan 50S). This means that with Alcan Tube-Alloy you're limited only by extruding—a process that makes possible tubing of most any cross-sectional shape and design.

New Alcan Tube-Alloy also forms readily, gracefully... without the problem of "orange peel." Normal polishing and buffing give it a superior finish. And—as for cost—it is priced well below higher strength alloys

heretofore necessary when distinctive styling or structural design was required. ALCAN TUBE-ALLOY'S cost is competitive with low-strength furniture tubing alloys now in common use.

We will be pleased to send you complete fabricating and metallurgical data on this newest development of Aluminium Limited. Mail the coupon now!

#### **Aluminium Limited**



Serving you ... through the nation's network of independent aluminum fabricators



Gentlomen: Kindly send me the new technical data brochure "New Alcan

TUBE-ALLOY."

Firm.

THE IRON AGE, December 17, 1959

67

Zone\_\_\_State\_



## POSITIVE DUPLICATION—EVERY TIME!



To "true" vertical lines, today's home builders depend on the familiar plumb—just as pyramid-building Egyptians did 5,000 years ago: The plumb's action and accuracy are always the same.

You can depend on the action and accuracy of these Cincinnati PD° Centertype Grinding Wheels (and all Cincinnati Wheels)... because you get Positive Duplication, time after time after time.

#### YOU GET CONTROLLED QUALITY

Thirty-six separate quality control steps—in the unique process—result in wheels of unsurpassed uniformity.

Everything that goes into a Cincinnati Wheel, every operation from formula blend to final inspection, is governed by a checking procedure that never varies.

You can reorder a CINCINNATI PD WHEEL knowing without question that it will act and grind exactly

like the original. Whatever shape, grade and size you specify . . . centertype, centerless, internal, surface, toolroom or snagging wheel . . . you get Positive Duplication—Every Time!

#### CUT COSTS...CALL CINCINNATI

Our factory representatives are trained specialists, experienced in grinding job set-ups and operations. Their skills and experience are at your service. Just call your CINCINNATI PD GRINDING WHEEL distributor, or contact Cincinnati Milling Products Division, Cincinnati 9, Ohio.



\*Trade Mark Reg. U. S. Pat. Off.

A PRODUCTION-PROVED PRODUCT OF THE CINCINNATI MILLING MACHINE CO.



# High-and mighty-stacker!

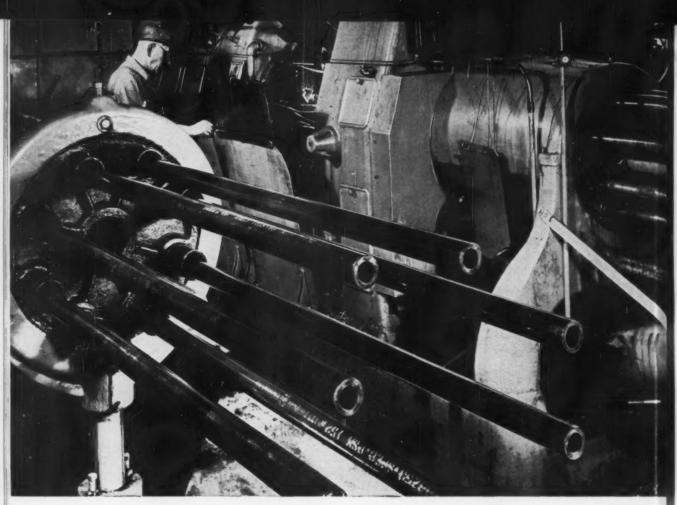
Lift, move and stack your king-size loads with a massive Gerlinger lift truck that takes weather, grades and rough terrain in its stride! Transporting 5 . . . 10 . . . 20 ton payloads in one man operations means king-size savings as well.

You'll get all the instant power, roadability and load stability you need, in *Gerlinger* lift trucks—literally "made to measure" for your specific handling operations. Ask for Towmotor-Gerlinger Certified Job Studies—and new Specification Folder GSS. Write Towmotor Corporation, Cleveland 10, Ohio or Gerlinger Carrier Co., Dallas, Oregon.

TOWMOTOR THE ONE-MAN-GANG -GERJINGER

LEADERS FOR 40 YEARS IN BUILDING FORK LIFT TRUCKS, CARRIERS AND TRACTORS

\*Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation



Bearings in the making are these lengths of Pittsburgh seamless mechanical tubing in the charging rack of a highspeed automatic cutting machine at the plant of a leading

bearing manufacturer. Special machining, hardening properties are built into tubes for this customer who produces more than 6,000 inner-rings per day.

Leading Bearing Maker Finds . . .

## Machinability of Pittsburgh Steel's Tubes Lengthens Tool Life, Gives More Pieces

One of the nation's oldest and largest ball bearing makers used alloy bars for high-speed machining of a difficult bearing part for 20 years.

But when Pittsburgh Steel Company showed how low-carbon steel tubes could provide the machining and case-hardening properties required, this big-name manufacturer switched to Pittsburgh seamless mechanical tubing.

These were the clinchers:

- · More pieces per day
- · Longer tool life
- · Less machining and scrap
- · Lower cost material

The part involved was the innerring of a clutch throw-out bearing a heavy production item at this customer's biggest plant since 1937. The bearing is the part that taked the abuse from the spinning clutch pressure-plate when you step on the clutch pedal.

To produce the inner-ring from low carbon steel, the customer demanded seamless tubing that was:

Highly machinable and uniform—for charging into a battery of 8-spindle automatic screw machines which subject each piece to 16 cutting operations.

Exceptionally hardenable and fine grained—for heat-treating to the hardness demanded of bearing steel and for finishing to ultra-close tolerance and super-fine surface.

The customer specified the grade of steel he needed to obtain these properties—AISI C-1024—then asked Pittsburgh Steel's sales engineers to produce it in seamless mechanical tubing.

The bearing maker's automatic machines produce 6,000 to 6,500 bearing inner-rings a day, testing the tubing's machinability with cutting tolerances as little as .003 inch.

Its hardening properties are

the ass grin per 7

this dril too long cos

bar ope bori 25 s 28 a littl T

the

Tub

proven in a 211/2-hour carburizinghardening-temper cycle.

Structural characteristics meet the test in an integrated finishingassembly operation that includes grinding and honing, and two 100 percent test operations.

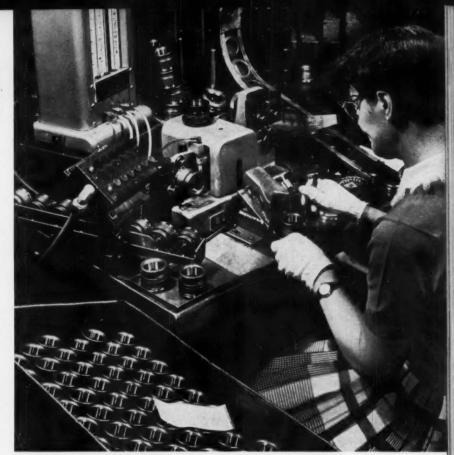
The bearing maker's superintendent of primary operations sums up the advantages of Pittsburgh Steel's mechanical tubing this way:

"We get more pieces during a day's operation. And we don't have as many chips to pull.

"We can use a boring tool and this stays in service longer than the drill needed for bar stock. Other tools used for ID cuts also stay in longer. So there we have lower tool costs.

"Finally, we are using a less expensive steel and gaining cycle speed. Since the inside drill speed is the controlling factor on cycle speed for bar stock, the elimination of this operation and the substitution of a boring tool permits cycle speeds of 25 seconds for tubing compared with 28 seconds for alloy bar stock or a little over 10 percent reduction."

This customer's experience with Pittsburgh Steel's seamless tubingthe advantages, the quality, the results—is typical of Pittsburgh Steel's



Initial assembly-one of two 100 percent testing operations-is where seamless shows its merits in finished bearing.

ability to supply tubular products for special applications and of its ability to help customers obtain more profitable production.

These same benefits can be tai-

lored to the needs of your operation requiring seamless mechanical tubing or any of the other tubular products made by the skilled tubemakers at Pittsburgh Steel Company.

nd

to

ing

ose

ade ese en

ngine-

500

ing

nut-

ch.

are

Tubing proves its machinability here where it takes 16 boring, reaming, grooving, recessing and burnishing cuts.

#### Pittsburgh Seamless Distributors

Baker Steel & Tube Company Los Angeles, California

Chicago Tube & Iron Company Chicago, Illinois

Cleveland Tool & Supply Co. Cleveland, Ohio Drummond McCall & Co., Ltd.

Montreal, Quebec, Canada **Edgcomb Steel Company** 

Philadelphia, Pennsylvania

Gilmore Steel & Supply Co. San Francisco, California

Earle M. Jorgensen Co. Perry Kilsby, Inc.

Los Angeles, California Mapes & Sprowl Steel Co. Union, New Jersey

**Metal Goods Corporation** St. Louis, Missouri Miller Steel Company, Inc.

Hillside, New Jersey

A. B. Murray Co., Inc. Elizabeth, New Jersey C. A. Russell, Inc. Houston, Texas

Ryerson, Joseph T. & Son, Inc. Chicago, Illinois

Solar Steel Corporation Cleveland, Ohio

Steel Sales Corporation Chicago, Illinois

**Tubular Sales** 

Detroit, Michigan Ward Steel Service Company Dayton, Ohio

#### Pittsburgh Steel Company Pittsburgh 30, Pa. **Grant Building**



DISTRICT SALES OFFICES

Atlanta Chicago Cleveland Dayton

Detroit Houston Los Angeles New York Philadelphia

Pittsburgh Tulsa Warren, Ohio



RITCO) FORGINGS

best by any test!

Take a close look at any Ritco Forging and you soon see why product designers and engineers rate Ritco first in forging. Made to close tolerances, each Ritco Forging has a smooth, flaw-free surface that eliminates costly finishing operations . . . saves hours of time and trouble on product assembly. In addition, its dense, fibrous structure and controlled grain flow assure maximum strength and toughness at points of greatest shock and stress . . . improve impact resistance and fatigue strength in key parts.

It will pay you to write these advantages into your product specifications. Get the full facts on Ritco Forgings now. Produced in a wide range of metals and alloys, and in many designs.

> Send us your blueprints now for estimates at no obligation!

#### RHODE ISLAND TOOL COMPANY

**Member Drop Forging Association** 

144 WEST RIVER STREET . PROVIDENCE 1, R. I.



Euclid Cranes

Write for this CATALOG

26 pages of informative data and complete information on many Euclid Cranes depict how our cranes will benefit your material handling, manufacturing and assembling operations.

An investment in a Euclid Crane pays off many times in reliable, trouble-free service for

HIGHEST

QUALITY

Standard models in a wide range of capacities, styles and spans generally meet average requirements.

A Euclid proposal on a custom crane to your specific needs is available without obligation.

HOIST LITERATURE IS an unusually long period of time.

ACCLAIMED BY INDUSTRY FOR

RELIABLE

PERFORMANCE

**EUCLID** HOISTS Series H

CAPACITIES 10 TONS

AARMIAATTAA

MAINTENANCE

The incor No. it po

parts

signi Th

every piece

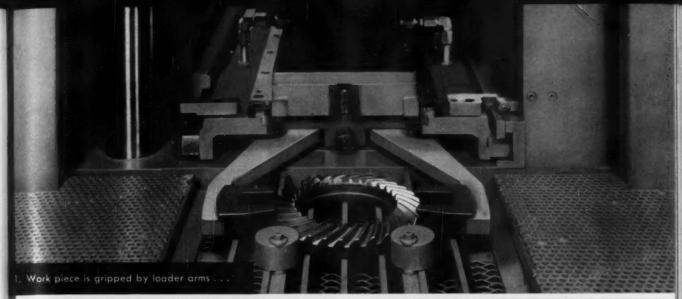
depo

Gle

#### The EUCLID CRANE AND HOIST Co.

1361 CHARDON RD.

CLEVELAND 17, OHIO







3. . . . where controlled pulsing avoids strains during the quench.

# New Gleason automatic quenching machine 3 times faster...superior quality achieved

The unique, fully automatic method incorporated into the new Gleason No. 117 Quenching Machine makes it possible to quench gears and other parts faster than ever before without significant distortion.

The machine discharges a piece every 30 seconds; accommodates 17 pieces in process at one time.

Automatic handling. Once a part is deposited at the front of the machine,

the No. 117 positions it on a quenching die and then clamps, flexes, and quenches it. Initial quenching takes only about ten seconds.

When the part cools past the critical hardening temperature, it is released from the dies. Still immersed in oil, the part then cools completely as it travels on a conveyor to the unload chute. As soon as part is released from dies, the machine is ready to receive another workpiece.

Faster production. You can speed up production materially with the Gleason No. 117 Quenching Machine. It handles ring gears and cylindrical parts up to 101/2" in diameter and 8" high. You can connect it with any conventional furnace so that parts are automatically fed to the quenching press. Push - button controls and timers are adjustable and easy to set. Dies can be changed quickly and easily.

Pulsing. All pressure on the work is pulsed momentarily throughout the die-quench. This permits work to contract without strain. During the die-quench, oil flows uniformly over and around the part.

Gleason engineers are ready to help you step up productivity with this new machine. For complete details, write for bulletin.



Gleason No. 117 Quenching Machine



### Vacuum Cleaner Manufacturer Specifies



Bending vacuum cleaner wand. A variety of fabricating operations also is performed on Ohio Special Quality Seamless Tubing.

Value analysis showed it would be more economical to buy than produce fabricated welded tubing parts for our new cleaner. What's more, we could avoid additional capital investment in equipment.

"So we added Ohio Seamless to our production line. They have the equipment and facilities to meet our design requirements and to hold to our steppedup schedules. And we don't pay shipping costs on scrap — just on finished parts...

Let Ohio Seamless translate your designs into finished parts... conserve your capital... cut your production and shipping costs. Contact your Ohio Seamless representative, listed in the Yellow Pages, or the mill at Shelby, Ohio — Birthplace of the Seamless Steel Tube Industry in America.

AA-884



### OHIO SEAMLESS TUBE DIVISION

of Copperweld Steel Company · SHELBY, OHIO

Seamless and Electric 'Resistance Welded Steel Tubing . Fabricating and Forging

SALES OFFICES: Birmingham, Charlotte, Chicago (Oak Park), Cleveland, Dayton, Denver, Detroit (Huntington Woods), Houston, Los Angeles (Lynwood), Miami, Moline, New Orleans (Chalmette), New York, North Kansas City, Philadelphia (Wynnewood), Pittsburgh, Rochester, St. Louis, St. Paul, Salt Lake City, Seattle, Tulsa, Wichita CANADA: Railway & Power Engr. Corp., Ltd. EXPORT: Copperweld Steel International Company, 225 Broadway, New York 7, New York

FROM

In.

• 2

by ap insula dust a requir

rubber hi-pot agains

also p menta added mater coil is are se tying a

end to inert of FOR M System

PROJI
progra

GE

A-c m

Support

Vulcan

Turn Ins

Using silicone silicone market chanice

THE

# **NEW** <u>Polyseal\*</u> Insulation Systems

# Sealed Against Contaminants

# Help Cut Motor Costs

MOTOR SAVINGS OF UP TO 50% are now possible by applying General Electric motors with Polyseal insulation systems in many outdoor, high moisture, dust and other severe atmospheres which formerly required additional enclosure protection.

POLYSEAL INSULATED COILS are vulcanized and cured—to bond and seal the supported silicone rubber tapes. Every coil must pass an underwater hi-pot test to make sure it is positively sealed against moisture and other contaminants.

IHIS NEW GENERAL ELECTRIC INSULATION system also provides greater thermal, voltage and environmental endurance than conventional systems. For added mechanical strength, glass fabric supporting materials are imbedded in each layer of tape. Each coil is wrapped with many layers of this tape. Coils are securely held in the motor by G.E. patented tying and bracing techniques.

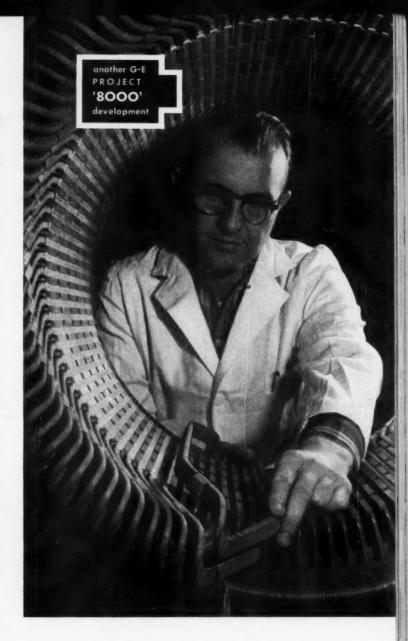
ALSO AVAILABLE IN G-E RANDOM-WOUND MO-TORS, the Polyseal system is used for stator and end turns, sealing windings with a waterproof, inert covering.

FOR MORE INFORMATION on Polyseal Insulation Systems, call your nearby G-E Apparatus Sales Office, or write for bulletin GEA-6889, Section 884-4, General Electric Co., Schenectady, N. Y.

PROJECT '8000' . . . a major General Electric program of research, redesign, advanced manufacturing and improved customer service on A-c motors 150 to 6000-hp.

\*Trademark of General Electric Co.



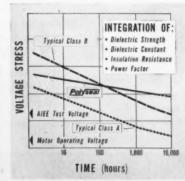


#### FULLY SUPPORTED



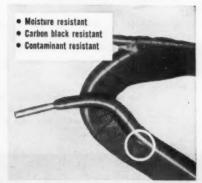
Using specially developed G.E. supported silicone rubber tape, Polyseal is the first silicone rubber insulation system on the market that is fully supported against mechanical breakdown.

#### LONG LIFE



Tested over long periods of time with voltage applied, General Electric's new Polyseal silicone rubber insulation systems retain a much hi ther dielectric strength than other comm. ly-used insulations.

#### COMPLETELY SEALED



Positive lead seal is provided by special silicone rubber compound which vulcanizes the lead tubing to the silicone rubber wall of the coil. This effectively seals the coil against contaminants.



POSITIVE ASSURANCE that every Holo-Krome socket screw will have correct tensile strength and a uniform distinguishing color, characteristic of quality heat treating, is embodied in the above AGF installation.

This AUTOMATIC production line consists of:

- An AGF No. 240 Heating Machine which hardens the screws in a controlled atmosphere at the rate of 400 to 500 pounds per hour.
- (2) An AGF Conveyorized Quenching Tank.
- (3) An AGF No. 242 Heating Machine which tempers the work utilizing residual quenching oil remaining on the work pieces to produce an attractive black finish, which then discharges into
- (4) an AGF Conveyorized Quench Tank equipped with a vibrator discharge chute for removing the oil and carrying the work to the packaging operation.

Your heat treating of fasteners or other small parts like stampings, screw machine products and precision castings can be accomplished with greater uniformity and quality control and at lower cost in AGF equipment.

of hardness and strength. AGF Furnace

ment contributes to this high standard.

PIONEER Furnace Engineers and experienced metallurgists at AGF will weigh your needs and make a proper recommendation without obligation.

Write today for the name of nearest AGF factory trained representative located in major industrial areas.

AMERICAN GAS FURNACE CO.

1004 LAFAYETTE STREET - ELIZABETH 4, N. J.



76

THE IRON AGE, December 17, 1959

PR wit

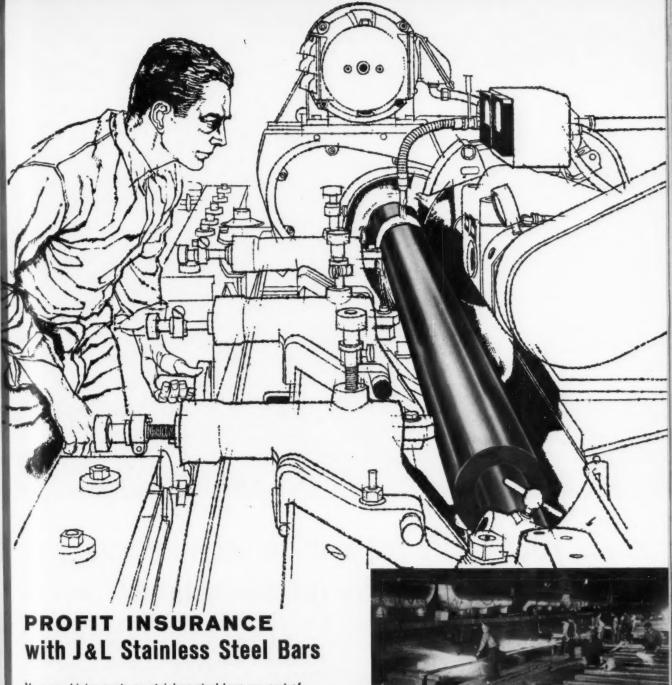
Your r your in and po times

Scrapp most o

The bi

J&L le

XX



Your machining costs on stainless steel bars are part of your investment for profit. Add your costs for tooling, handling and polishing, and you multiply your investment, often many times over.

Scrapping a single bar wipes out that investment—and with it most of your profit on a large volume of finished goods.

Every step taken to reduce rejects helps insure profits! The biggest step you can take in that direction is to specify J&L Consistent Quality on all orders for stainless steel.

J&L leads the industry in melt shop standards for stainless steel —the point where quality starts, and your profit insurance begins.



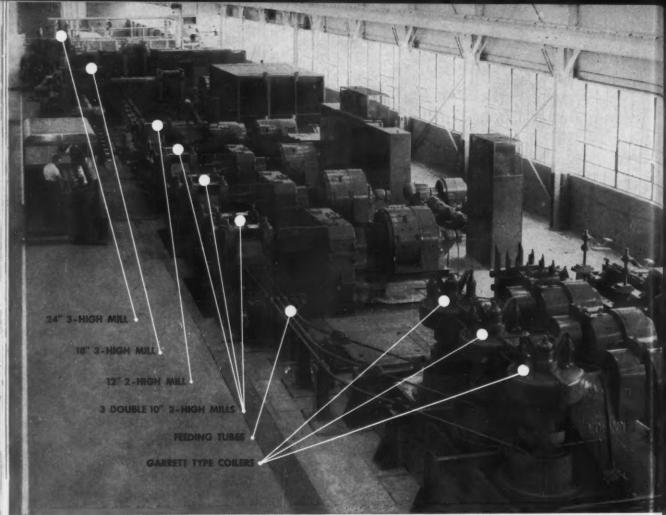
Careful attention to every production detail is the key to J&L quality

**STAINLESS** 

SHEET . STRIP . BAR . WIRE

Plants and Service Centers:

Los Angeles • Kenilworth (N. J.) • Youngstown • Louisville (Ohio) • Indianapolis • Detroit



Modern continuous copper wire rod mill designed and built by Loewy-Hydropress.

# LOEWY wire rod mills reduce wire bars to 5/16 in. wire rod automatically

This Loewy copper wire rod mill, which has been in successful operation for 2 years, rolls 5/16 in. wire rod from standard wire bars in a continuous operation. It is fully automated and all phases are controlled from one pulpit.

In addition to excellence of product, the owner is extremely pleased over the fact that, due to automatic operation, this installation permitted him to start operations with an inexperienced crew. Whether you are a user or producer of wire rod, your competitive situation probably calls for equipment which functions flawlessly and with minimum personnel. Careful economic study might well reveal that the installation of a wire rod mill would be highly profitable for you.

Consult us—without obligation—on a mill which will answer your individual requirements for wire rod. Write Dept. A-12.

### Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills . Hydraulic machinery . Industrial engineering



Can you put your finger on machining economies like this?

cost of 800 brazed single point tools at approximately \$3.50 each \$707AL \$2,800.00 f

Cost of 100 square CARMET INDEXABLE INSERTS with 800 cutting edges at \$\textit{APPROX.} \\$\( 100.00 \)

In addition to these savings on machining, you gain in high production rates, longer tool life, in longer tool storage and inventory, as well as tool change downtime.

Over 9 styles and 109 sizes Carmet cadmium plated tool holders. 6 carbide grades for machining almost all materials from wood and plastics to high alloy steels.

then it's time to switch to CARMET INDEXABLE INSERTS AND TOOL HOLDERS





Write for New-Revised CATALOG C-16-B CARMET CEMENTED CARBIDES FOR INDUSTRY

This 32-page book contains revised prices and complete specifications on Carmet's full line of cemented carbide tipped tools, blanks and holders. Speed and feed charts, grade comparisons and ordering information included.

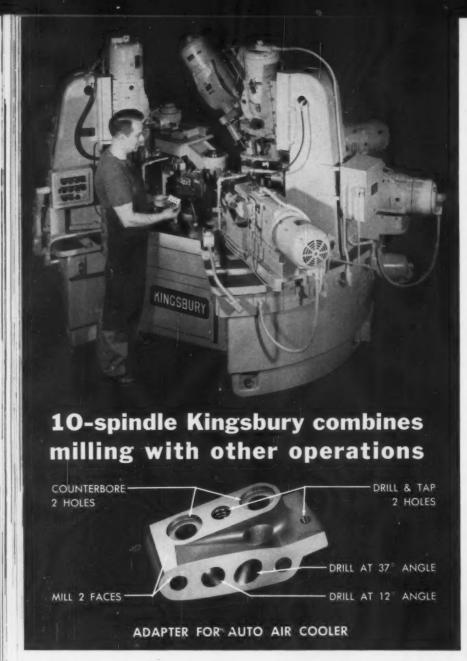
ADDRESS DEPT. A-24

See your Carmet Distributor now—or write to Carmet Division, Allegheny Ludlum, Detroit 20, Michigan.



CEMENTED CARBIDE DIVISION OF ALLEGHENY LUDLUM STEEL CORPORATION





Two units each mill one face with a finish better than 80 micro. Both units are at the operator's left — one vertical and one horizontal.

On the right are five units — angular, vertical and horizontal. They operate on four holes — drill, counterbore and tap.

Production is 360 parts per hour gross. Seven duplicate work fixtures (on a 30-inch index table) make possible operations on six parts while the operator changes parts at the loading station.

All this is on a base 96 inches in diameter. This saves floor space.

Oil mist lubricates the milling and multi-spindle heads.

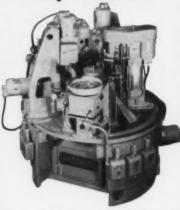
The customer returned his base, index unit and operating units to us for retooling. That was a real saving. And he has the Kingsbury assurance of good basic design, rugged, accurate construction, and test runs before shipment.

For high production at low cost, ask to have our representative call and talk over your jobs. Let him get you a specific proposal. Kingsbury Machine Tool Corp., Keene, New Hampshire.

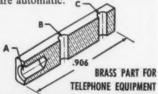
# KINGSBURY

MULTI-UNIT AUTOMATICS

# High production in minimum space — fully automatic



Gross production for this 8-spindle Kingsbury is 1,400 parts per hour for drilling the three holes, countersinking A and burring B and C top and bottom. Parts are fed from the hopper via a chute to an air-operated loading mechanism. Clamping, unclamping and ejection are automatic.





## 1,000,000 cycles a year for 30 years with no serviceman

In November, 1929 Shakespeare Co. of Kalamazoo, Mich. set up this Kingsbury with their fixtures. It drills five holes and reams two in a part used in fishing tackle. Net production rate is 600 parts per hour.

Vice-President Earl Clickner (behind the operator) says, "We have never had to call a serviceman on it. We have run it for thirty years — about a million cycles a year — and it still gives us almost no trouble."

And level and BU

a lo leve pla

TLI

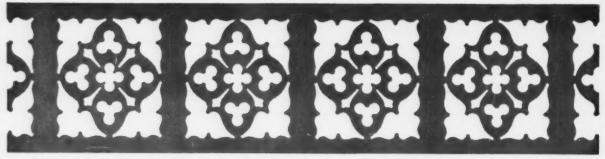


And it really comes out flat! Talk about versatility: This leveler is designed for hot-rolled plate up to 74" wide, and has a guaranteed thickness range of 3/6" to 5/8". BUT... Inland Steel is successfully flattening as low as 1/16" floor plate with it. This particular installation is on a long plate processing line, where shearing is done after leveling. Therefore, the Voss Leveler has been handling plate up to 40 feet in length.

Voss Levelers will solve almost any leveling problem

... at high production speeds. Patented features make possible accuracy and flatness unheard of with any other leveler, equalling or exceeding stretcher-level flatness in many cases. Voss Levelers are now in use in steel, aluminum and other non-ferrous plants, in applications ranging from heavy plate to cold-rolled strip, galvanizing lines, aluminum sheets and many others. Let Voss put its years of experience to work for you. Call or Write today.

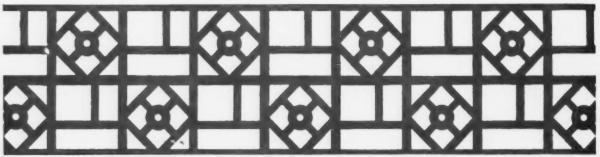




make your design



shine with Hendrick



perforated metal

You may find just the perforated metal to top off your design when you look over the patterns that are exclusively made by Hendrick. These patented patterns are an important part of the Hendrick catalog, which contains more than 100 exclusive designs in all.

Hendrick Perforated Metal is furnished in every available commercially rolled metal. All can be supplied with varying numbers and sizes of perforations, in plain or panel effects.

All combine the functional and the decorative with low cost.

Write for free Catalog from Hendrick...the pioneer in perforated metals. This catalog can show you dozens of ways to make *your* design shine.

# HENDRICK

MANUFACTURING COMPANY 37 Dundaff Street, Carbondale, Pa.

PERFORATED METAL • PERFORATED METAL SCREENS • WEDGE-SLOT SCREENS • HENDRICK WEDGE WIRE SCREENS • ARCHITECTURAL GRILLES • MITCO OPEN STEEL FLOORING—SHUR-SITE TREADS • ARMORGRIDS • HYDRO DEHAZERS • DISTILLATION COLUMN INTERNALS

# DEMAG

CONTINUOUS STEEL CASTING PLANTS



TUNDISH MOULDS

SPRAY CHAMBERS

ROLLER APRON

0000

FLAME CUTTER

BILLET TILTER

ROLLER CONVEYOR

\*\*\*\*\*\*\*\*\*\*\*\*

#### EIGHT-STRAND CASTING PLANT

in full operation at the Terni iron and steel works in Italy since 1958

Developed to the Junghans system in co-operation with Messrs. Mannesmann and Böhler

#### DEMAG DUISBURG GERMANY

U. S. - Representatives:

AMERICAN DEMAG CORPORATION, One Gateway Center, Pittsburgh 22, Pa.





There's a Nicholson or Black Diamond file for every purpose... 6000 of them in fact. There's one that's ideal for your metal removing job.

For example, the Nicholson or Black Diamond "Magicut" file is an all-purpose machinist's type. It removes up to 25% more metal with every stroke. This means that by changing to the "Magicut" file, you can reduce filing costs as much as 25%.

The "Magicut's" extra efficiency comes from the unique structure of the teeth. They're on an extreme angle and called "penetrating-planer" type teeth. With each stroke they take a deep bite and leave a smooth surface.

You can use the "Magicut" file on all soft or machine temper metals. Ask your Nicholson or Black Diamond file distributor to demonstrate this file. Try it yourself. You'll get faster filing results at lower cost. And remember...it isn't a "Magicut" file unless it carries the Nicholson or Black Diamond trademark...your assurance of outstanding performance.

Industrial Distributors provide the finest goods and services in the least possible time. Our products are sold exclusively through them.



Nicholaon File Company, Providence 1, Rhode Island

FILES • ROTARY BURS • HACKSAW AND BAND SAW BLADES GROUND FLAT STOCK • INDUSTRIAL HAMMERS



UNITED ENGINEERING AND FOUNDRY COMPANY
Pittsburgh, Pa.

# General Electric announces the new Adjust-O-Breaker toolholder!

Carboloys toolholder with adjustable chipbreaker lets you adjust from any angle . . . offers any desired adjustment within its range\* . . . features "floating" indexable chipbreaker with absolute repeatability.

MORE jobs with LESS tooling—that's what you get with this new Carboloy® Adjust-O-Breaker toolholder! No need to have a separate chipbreaker for every cutting job. No need to restrict yourself to toolholders with only two or three chipbreaker settings. Now you can have this versatile new Carboloy toolholder . . , and adjust it for any chipbreaker setting within its range.\*

Available right now from stock in 5 styles, negative rake, for left- and right-hand machining, the Adjust-O-Breaker truly brings new meaning to disposable tooling.

So, to get cutting tool versatility that lets you handle *more* jobs with *less* tooling, check into the complete Carboloy line—Lift-O-Matic (positive rake, negative rake, and tracer), heavy-duty, and the new Adjust-O-Breaker toolholder. The complete line of Carboloy inserts, insert seats, convertible seats, and brazed tooling is the *broadest* in the industry...designed to meet *every* tooling need to give you BETTER PROFITS THROUGH BETTER TOOLING.

See your Authorized Carboloy Distributor now. He's listed in the Yellow Pages. Metallurgical Products Department of General Electric Company, 11153 E. 8 Mile Street, Detroit 32, Michigan.

CARBOLOY.

METALLURGICAL PRODUCTS DEPARTMENT

GENERAL (88) ELECTRIC

CARBOLOY® CEMENTED CARBIDES

MAN-MADE DIAMONDS • MAGNETIC MATERIALS

THERMISTORS • THYRITE® • VACUUM-MELTED ALLOYS

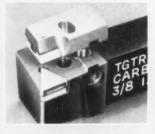


\*Sizes 16V and 85V: adjustable range 1/46" to 7/2"

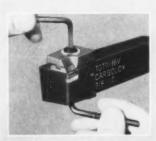
Size 20V: adjustable range 1/46" to 11/12"



1. Chipbreaker setting adjusts to any width within range. Set screw with two open ends provides access from either side. No springs to adjust.



2. Design permits absolute repeatability of settings. Floating chipbreaker is indexable. Can't drop out when clamp is loosened.



 Clamp screw is accessible from top or bottom; allows easy indexing or replacement even when toolholder is vertical or upside down.



4. Standard disposable inserts, Carboloy insert seats and convertible seat are used with toolholder. Insert seats are indexable and self-aligning.



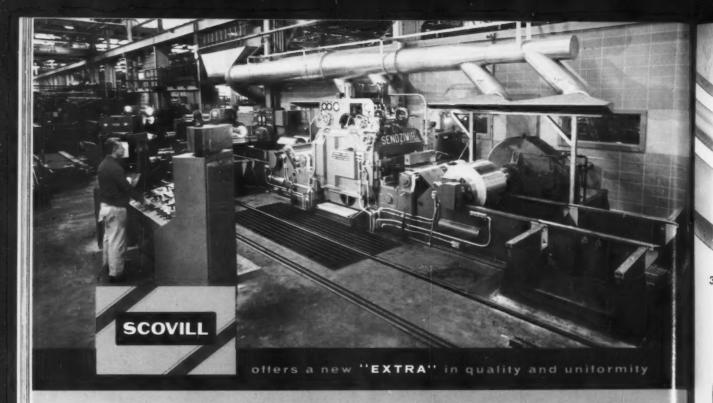
#### SCOVILL

QUALITY CAN PUT YOU AHEAD OF COMPETITION Many a Scovill customer has said to us, in effect, "We're doing so well with Scovill Mill Products that it's giving us a nice little 'edge' on the competition. Don't tell our competitors". But that kind of "secret" cannot be kept for long, and it's a fact that more and more fabricators are following up the smart lead and switching to a higher standard of quality in Scovill Brass . Copper . Aluminum. They're finding that Scovill's deliberately planned program of constant improvement in mill production equipment and methods pays off in results on the fabricator's own production line.

You can buy Brass • Copper • Aluminum Mill products from many sources . . . BUT Scovill fabricator-oriented services are available only from . . . the source of Mill Products bearing this Trademark.



Scovill Manufacturing Company, Mill Products Division, 99 Mill St., Waterbury 20, Conn. Phone Plaza 4-1171.



#### ENDZIMIR ROLLED

Here is the last word in rolling mill equipment and coordinated precision controls for production of brass strip and aluminum sheet to far closer dimensional tolerances and with far superior micro-inch finish than that available under previous commercial standards.

Fabricators who have been awaiting materials of such "super" accuracy, uniformity and micro-inch surface finish can expect these important benefits:-

- A dependably close ratio between anticipated footage of metal, weight of metal and actual parts produced, because of precision controlled gauge tolerances.
- · Fewer press or other machine adjustments and longer tool wear with the use of metal that is more uniform in all respects.
- · Superior finish and appearance of parts as a result of much closer micro-inch finish control.

Fabricators requiring this extra measure of quality, this extra aid to maximum economy in production of brass or aluminum parts, are invited to discuss this new Scovill Service.

made bottor to bring out the BEST in your products

it PAYS to specify ...

BRASS

COPPER

ALUMINUM

MILL PRODUCTS identified by this trademark



Scovill Manufacturing Company, Mill Products Division, 99 Mill St., Waterbury 20, Conn. Phone PLaza 4-1171.

STANDA

AUTOMA

STANDARD RADII\*

AUTOMATIC RADII\*

R

drastically reduces profiling costs!

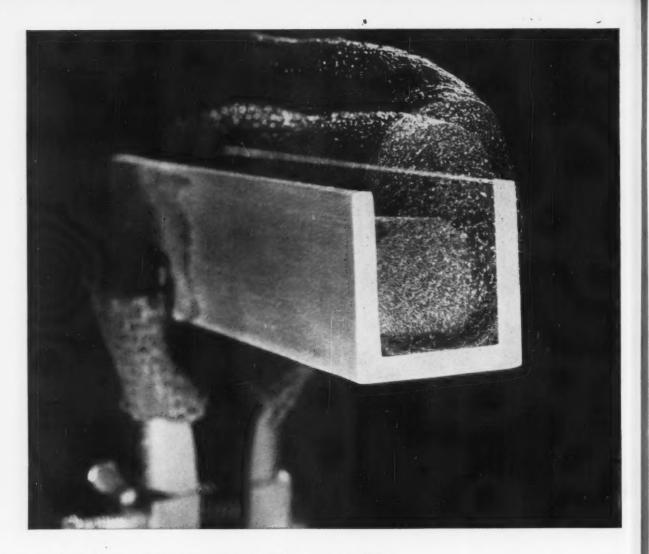
> Precision profile milling can now be accomplished in seconds with unskilled labor.

The amazing new McKay Radii will cut either simple radii or irregular shapes with no set-up or layout. The operator simply slips the material to be profiled into a simple vise and moves a handle through a 180 degree arc.

Available in either manual or pushbutton automatic models the Radii is modestly priced and requires less than 10 square feet of floor space and only standard shop electrical and air facilities.

For literature or further information on this outstanding cost-cutter write McKay Machine Company, Youngstown 1, Ohio.

MSKAY ACHINE



Seal even irregular gaps and seams with

# **3M HEAT EXPANDABLE SEALERS**

TIGHTER, TIGHTER, TIGHTER grow seals of unique 3M Heat Expandable Sealers. Expanding up to 125% under the aormal heat of a paint-baking cycle, they cure to a tough, flexible mass that really keeps out dirt, water and weather...that completely seals even the most irregular gap or seam.

In either *liquid* or *extruded bead* form, 3M Heat Expandable Sealers help you

save time and cut costs, too. Simply flow in the liquid or lay in the extruded solid by hand. There's no material waste, no cleanup time involved. And because no solvent is present, there's no danger of toxicity

The unexpanded solid is also efficient as a gasket replacement sealer, flange sealer and for other sealing jobs. It's tacky enough to stay in a vertical or overhead seam. Yet, it can be easily removed. Proper positioning is never a problem. Investigate versatile 3M Heat Expandable Sealers now.

SEE WHAT 3M ADHESIVES CAN DO FOR YOU!

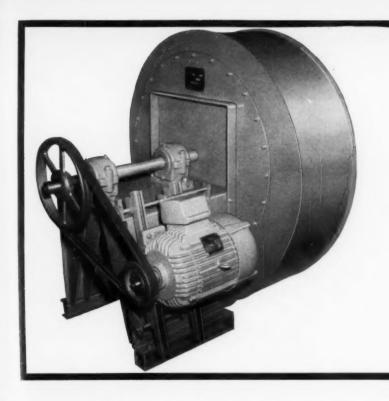
Contact your 3M Field Engineer. Or, for more information, write on your company letterhead, stating your area of interest, to: A.C.&S. Division, 3M, Dept. SAQ-129, St. Paul 6, Minn.

ADHESIVES, COATINGS AND SEALERS DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY

... WHERE RESEARCH IS THE KEY TO TOMORROW





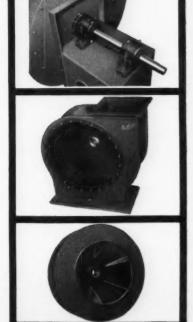
From Rugged **Hot Gas Applications** To Tough Materials Handling Jobs ...

#### "BUFFALO" EXHAUSTERS CAN TAKE IT!

Buffalo" Industrial Exhausters are ruggedly built, highly efficient heavy duty ans designed for a wide variety of applications. Husky steel plate housing is welded throughout. Adjustable to any discharge direction. Reversible for clockwise or counter-clockwise rotation. Available in numerous arrangements for many severe air and materials moving jobs. These include:

- Moving Hot Gases 200° F. to 850° F. For this purpose units are equipped with heat slingers, high temperature ball bearings and/or separated steel bearing subbase.
- Handling Corrosive Fumes. Installations have proved that "Buffalo" Rubber-Lined Exhausters will outlast metal fans up to twelve to one. Rubber is vulcanized directly to all metal parts exposed to acid fumes.
- Materials Moving. Type "MW" material wheels are available for moving emery dust, saw dust, chips, long shavings and many other types of materials.

Investigate the advantages of "Buffalo" Industrial Exhausters for your severe air or materials moving jobs. Phone your "Buffalo" engineering representative, or write for Bulletin FI-110.



Upper: Heat Slinger for cooling shaft and bearings on a "Buffalo" Hot Gas Exhauster.



Buffalo, N. Y.

Buffalo Pumps Division • Buffalo, N. Y. Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

AIR CLEANING AIR TEMPERING Center: "Buffalo" Rubber-Lined Exhauster for corrosive fume handling.

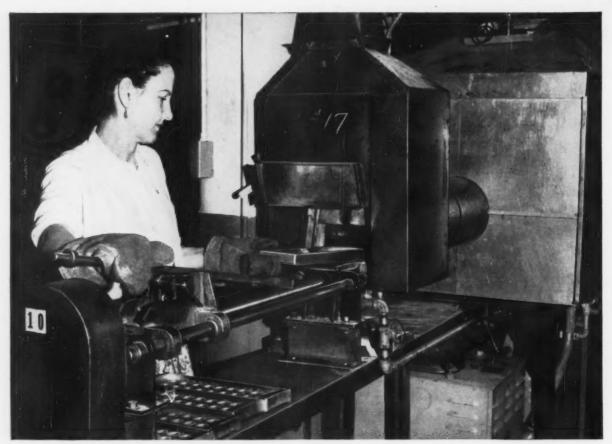
VENTILATING EXHAUSTING

FORCED DRAFT

COOLING HEATING

INDUCED DRAFT PRESSURE BLOWING

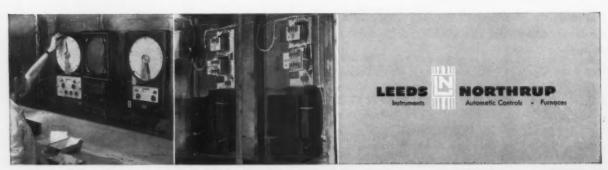
Lower: "Buffalo" Type "MW" Material



Fansteel Metallurgical Corp.: Operator loads sintering furnace with trays of FASTELL® heavy duty electrical contacts.

### Critical sintering temperatures a problem?

Not at Fansteel Metallurgical Corp., where Speedomax® H is regulating moly heaters and simplifying control of critical sintering temperatures. With temperature dependent upon load density and compact composition, Fansteel depends upon experience for the right temperature . . . upon Speedomax H for control reproducibility. Rugged, compact and completely reliable, this controller continuously regulates power input to moly heaters . . . holds furnace temperature well within specified limits. Speedomax H is providing the same dependable control on numerous heat treat processes . . . is helping produce both process economies and a quality product. Whatever your heat treat, it'll pay you to investigate Speedomax H! For details, contact your nearest L&N office or write 4956 Stenton Ave., Phila. 44, Pa.



"H" C.A.T. control brings furnace from 900 to 1300 C in 16 minutes without overshoot or hunting. Magnetic amplifiers are conveniently mounted on panel back.

NEW Customer Service from MORSE—

# Double-Pitch Sprockets and Chain Combination "Right off the Shelf!"

If your equipment design calls for low-speed transmission up to 500 rpm, here's the good news of on-the-spot delivery.

Morse precision, double-pitch stock sprockets, coupled with Morse double-pitch chain make a perfect combination . . . ready for immediate delivery . . . with no special machining time needed. These Morse components, right off the shelf, provide lighter, smoother, more compact power transmission. Their low cost, from big-volume stock production, is also an important factor.

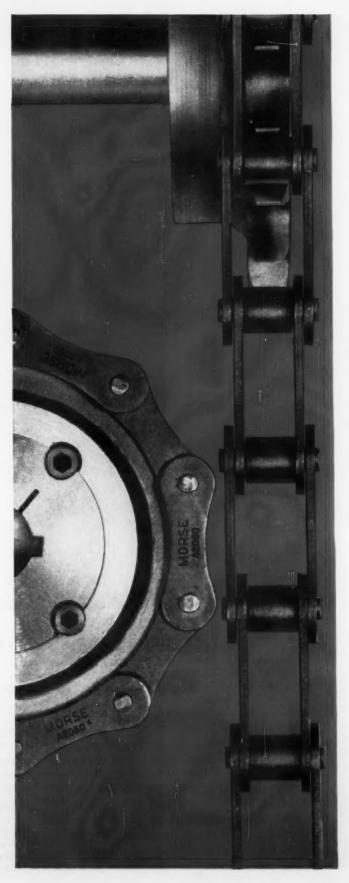
Morse Taper-lock® double-pitch sprockets with odd number tooth design of 17, 19, 21, 23, 25, or 35 cut teeth give double service life, since each tooth engages the chain only every other revolution.

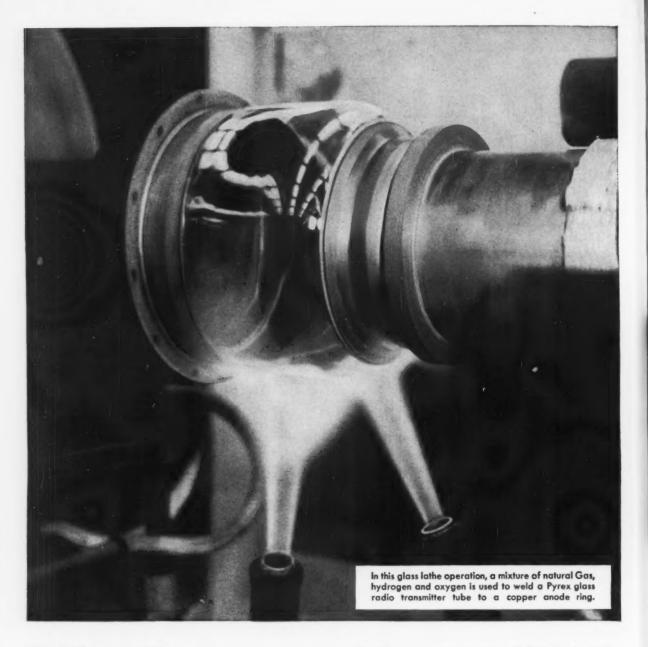
Morse double-pitch roller chain is precision made to A.S.A. standards. Packed in convenient 10-ft. lengths, Morse double-pitch chain comes in 1" to 2" pitch for power transmission and in 1" to  $2\frac{1}{2}$ " pitch for conveyor service.

So, if your chain problem is packaging, farm machinery, conveyor, power transmission, or timing drives you'll find your answer waiting at your Morse distributor—he's listed in the Yellow Pages under "Power Transmission" or write: Morse Chain Company, Dept. 33-129, Ithaca, N. Y. Export Sales: Borg-Warner International, Chicago 3, Illinois. In Canada: Morse Chain of Canada, Ltd., Simcoe, Ontario.



ONLY MORSE OFFERS ALL FOUR: Roller Chain, Silent Chain, Hy-Vo® Drives and "Timing"® Belts.





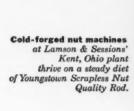
# RCA welds glass to metal at over 2000° F. ...thanks to GAS

Natural Gas is used to weld glass to metal in the production of radio and television tubes of many types at the RCA Electron Tube Division plant in Lancaster, Pennsylvania.

To effect the weld at over 2000° F., a mixture of natural Gas, hydrogen and oxygen maintains the high welding temperature on the Pyrex glass and metal parts as they rotate on a glass lathe. A Gas flame is then used to control and equalize the cooling of the glass down to the 900-600° F. range.

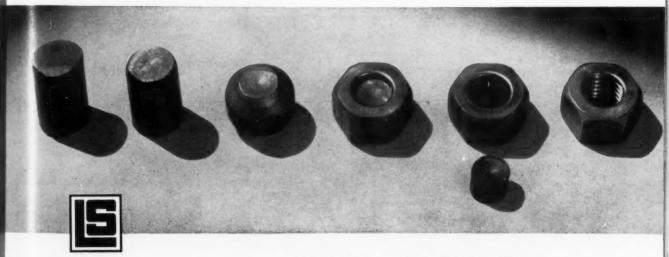
For information on how Gas can help you in your production operations, call your Gas Company's industrial specialist. He'll be glad to discuss the economies and superior results you get with Gas and modern Gas-fired industrial equipment. American Gas Association.

See Playhouse 90 with Julia Meade on CBS-TV.
Watch local listings for time and station. Sponsored
by your Gas Company and the Gas Industry.





# Accent on Excellence Youngstown scrapless nut quality rod



George S. Case, Jr., President of Cleveland's Lamson & Sessions Company, recently stated: "Today, as industry moves more and more toward automated or semi-automated production and assembly, highest quality and reliability of components becomes a must."

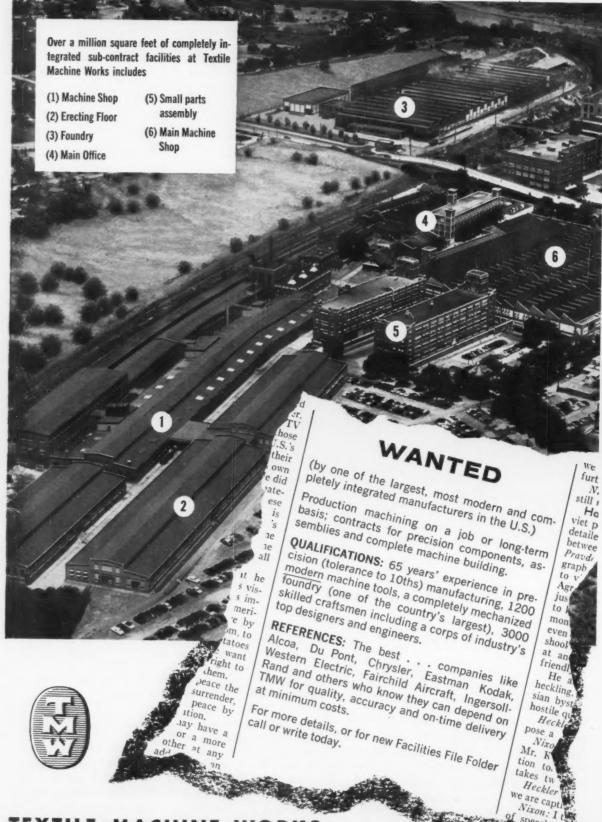
To keep their product quality at the highest level, Lamson & Sessions' engineers specify Youngstown's Scrapless Nut Quality Rod for cold forged nuts.

This versatile rod feeds smoothly through the cold headers—results in fewer rejects, less downtime and reduced die wear.

Wherever steel becomes a part of things you make, the high standards of Youngstown quality, the personal touch in Youngstown service will help you create products with an "accent on excellence". The Youngstown Sheet and Tube Company, Youngstown, Ohio. Carbon, Alloy and Yoloy Steel.



Youngstown



TEXTILE MACHINE WORKS

CONTRACT DIVISION, READING, PENNA.

TH

do you get production reports in time for a decision...or a post mortem?



# IBM 357 Data Collection System speeds "live" production data to management in time for action

Production line data must be "live" if it's to be of use in management decisions. The new IBM 357 Data Collection System now makes this information available as soon as it occurs... in readily usable punched card form. The IBM 357 greatly increases the volume and speed of data flowing from production line to management, yet drastically reduces the amount of paper work involved.

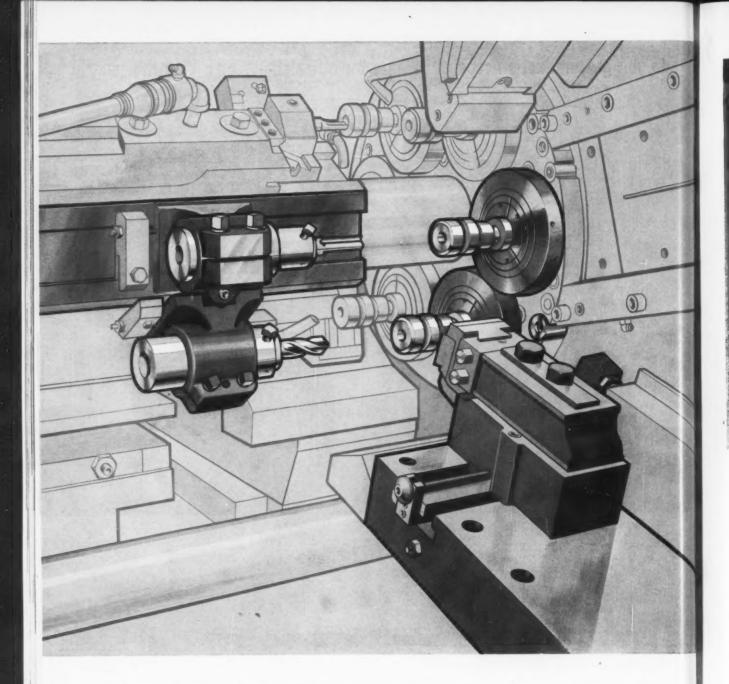
Each central receiving station of an IBM 357 System is served by up to 20 compact, wall-mounted input stations, strategically located near work areas to receive data directly from the production line. Facts fed into the input station are flashed to the recording center and automatically punched into IBM cards, ready for processing. The IBM 357 System is compact, economical, flexible. It can be expanded or modified at any time to handle changing needs.

Your local IBM representative can tell you about the money-earning advantages of the new IBM 357 . . . call him today. The IBM 357 Data Collection System, like all IBM data processing equipment, may be purchased or leased.

balanced data processing







# New Britain's answer to a serious threat

Overseas production of just about anything you care to name is making serious inroads on American domestic and foreign markets. It's no secret that European and Asian industry is catching up fast technologically—and they have a real competitive advantage in plenty of low cost skilled labor. While many foreign products are still inferior to those of domestic manufacture, this is far from true in all cases. The answer is, of course, increased productivity at lower cost.

In its all-new line of bar machines, New Britain has developed the most modern bar-turning units available. Five models in two different series are offered with capacities from 1½" to 5½". These machines are designed for really fast, trouble-free, high-precision production. More operations per machine are possible than ever before. Wide open tool areas allow unlimited combinations of end working and forming tools. New Britains will stay new longer. The exclusive wear-preventing features so

familiar to New Britain users have been retained and improved. Catalogs on both the small and large series machines are yours for the asking. After looking this literature over if you think one or more New Britains may help improve your competitive situation, we will be happy to review your prints and arrange a demonstration. No obligation, of course. Call us or call your local representative. New Britain-Gridley Machine Division, The New Britain Machine Company, New Britain, Connecticut.



# Stanscrew service helps insure precision of silbarco pumps

Gilbert & Barker Mfg. Company builds its famous Gilbarco gasoline pumps for oil companies large and small, and ships them to every state in the union as well as to most countries overseas. To insure precision and dependability of these pumps, great care must be taken in all assembly operations. Fasteners, for instance, must be torqued precisely to keep all components in perfect alignment.

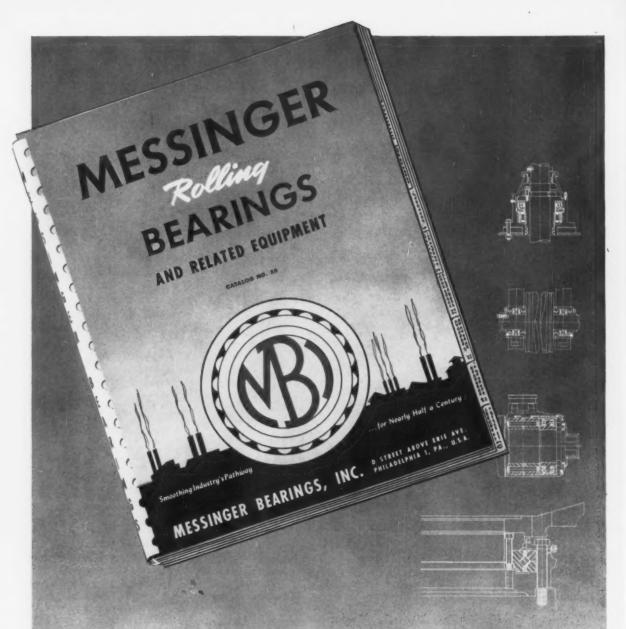
Because of the critical importance of fasteners to its products, Gilbarco has selected Stanscrew heat-treated cap screws for such key applications as the positive displacement meter (shown in the insert). Stanscrew fastener specialists were happy to assist Gilbarco engineers in determining the right fastener with the correct torque to assure trouble-free service.

Gilbert & Barker is one of a long roster of honored names in American industry who have found it pays to standardize on Stanscrew. A product of unsurpassed quality . . . a broad selection of more than 5,500 different fasteners prompt service through local distributors, backed by complete stocks at three conveniently located plants . . . these are a few of the reasons Stanscrew means greater value in fasteners. Stanscrew's experienced fastener specialists can often suggest ways to improve your assembly procedures. Your local Stanscrew distributor will be happy to arrange a prompt visit. Call him today.



CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois



THIS CATALOG will give you an entirely new concept of the relationship between a product and its bearings. Used at the drawing board, it will in all probability lead to important reductions in dimensions, weight and over-all costs of the machine or other equipment under development, as well as its increased efficiency and length of service. It will place at your right hand the experience of nearly 50 years of Roller Bearing advancement. Send for your copy, today.

Once it is determined that bearings are required, consultation with Messinger Engineers is the logical next step. No obligation incurred. MESSINGER BEARINGS, Inc.
ROLLER AND BALL BEARINGS
FEATHERWEIGHT TO HEAVYWEIGHT

D STREET ABOVE ERIE AVE. • PHILADELPHIA 24, PA. "Smoothing Industry's Pathway for Nearly Half a Century"

How you're ahead with Danly's years-ahead design

# EVEN ONE LESS DAY OF DOWNTIME PER YEAR

**RETURNS MORE THAN 5% OF YOUR PRESS COST** 



Downtime on an important production press is far more expensive than the direct maintenance costs involved. Schedules are disrupted — workers and machines stand idle—production is lost—profits suffer. Production time on a \$30,000 press is very conservatively worth \$30 per hour. On this basis alone, one sixteen-hour day of downtime will incur costs of \$480. In a nominal 3-year payout period, one extra day of production per year can repay 5% of your press cost.

Danly presses are engineered to give you that extra day of production, many times over. Design innovations years ahead of the industry, and an extra measure of brawn and precision keep Danly equipment on the job month after month, without maintenance interruptions.

Outstanding case in point: the 500-ton, straight side

press pictured above has been operating at the General Electric Company's Hotpoint Division Plant at Milwaukee, Wisconsin for eleven full years without losing a single day of scheduled production! During that time it has paused only twice for planned maintenance. Seven other Danly presses in this pressroom have equally impressive records of maintenance-free operation.

Savings in maintenance downtime alone can wipe out all price differential between quality and "economy"

equipment. Still more profit will be realized from longer die life, improved parts accuracy, and other bonus benefits. For a frank and comprehensive review of these advantages, SEND FOR BULLETIN 300.



DANLY



DANLY MACHINE SPECIALTIES, INC., 2100 S. LARAMIE AVE., CHICAGO 50, ILLINOIS

# DE LAVAL offers new A.G.M.A. Gear Standards Booklet for Engineers

You will not want to be without this newly published American Gear Manufacturers Association booklet. It outlines the new standards for single and double reduction cylindrical worm and helical worm speed reducers.



Get this new A.G.M.A. 440.03 booklet free of charge by request on your company letterhead.

This new standards booklet contains important design data including: Power rating of worm gears • Ratio correction factor (Km) • Materials factors (Ks) • Velocity factor (Kv) • Coefficient of friction  $(\mu)$  • Thermal factor • Service factors • Efficiency • Overhung load capacity • Lubrication.

The materials factor (Ks) and the coefficient of friction  $(\mu)$  are new, reflecting the latest advances made in worm gearing in the past few years.

We have also recently published our new Delroyd Worm Gear Sets Catalog 3800 and Delroyd Single Reduction Worm Gear Catalog 3805, which contain comprehensive information on the selection of these units.

Prim

De Laval furnishes worm gearing under the trade name DELROYD and has a complete line from  $1\frac{1}{8}$ " to 36" center distance, in horsepower ranges from .04 to 700 and in ratios from 5: to 4900:.





DE LAVAL Steam Turbine Company

899 NOTTINGHAM WAY, TRENTON 2, NEW JERSEY

Primary aluminum pot line at our reduction plant, Columbia Falls, Montana. For information about all our facilities and products, write for booklet, "This is Anaconda Aluminum".

# ANACONDA: a respected name, and now a vigorous force in aluminum

When buying aluminum for your product ...

PIG - INGOT - SHEET - PLATE - TUBE - PIPE - ROD - BAR - EXTRUSIONS -PLAIN AND LAMINATED FOIL

check with ...



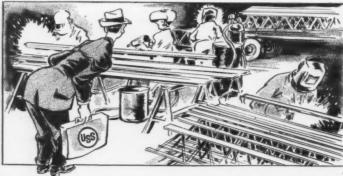
ANACONDA ALUMINUM COMPANY . GENERAL OFFICES, LOUISVILLE 1, KENTUCKY

### You get steel + plus from U.S. Steel

"We recommended a change in steel and processing that saves them \$6,000 a year,"

SAYS SPENCE WILLIAMS TCI SALES REPRESENTATIVE, COLUMBIA, S. C.

"Our customer, the Owen Joist Company, Cayce, South Carolina, previously bought steel strip in coils to make channels for bridging their bar joists.



"After taking a hard look at their operation not long ago, we suggested they switch to hot rolled sheet in coils and have it slit by an outside processor. This saved them almost \$5,000 a year. To make the anchors for their bar joists, we recommended they buy a different type of H. R. Steel . . . and in coils rather than cut-to-length strip. The coils could then be cut to required size by a steel processor. This method practically eliminated scrap loss and saved the company an additional \$1,000 a year."





Alert sales assistance like this is profitable for both consumer and supplier. And technical sales assistance in the selection and most efficient use of steel is only one of the many U. S. Steel Plus services that mean more profit to you.

When you buy from U. S. Steel, you get steel plus technical assistance . . . research . . . facilities . . . marketing assistance

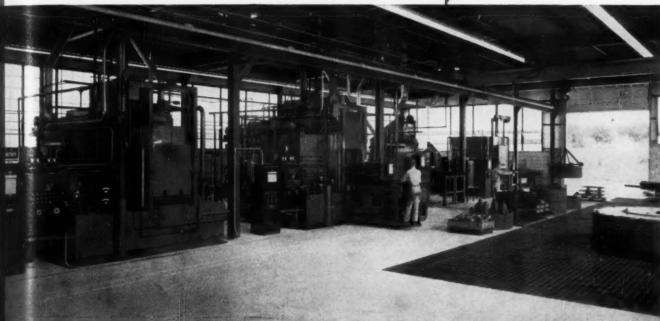


United States Steel Corporation — Pittsburgh American Steel & Wire — Cleveland National Tube — Pittsburgh Columbia-Geneva Steel — San Franciaco Tonnessee Coal & Iron — Fairfield, Alabama United States Steel Supply — Steel Service Conters United States Steel Expert Company

#### **United States Steel**

## stop temperature variations in high density loads with SURFACE POWER CONVECTION





Exceptional uniformity and speed of heat treating, regardless of load density, help make a consistent profit-maker of this mechanized line of Surface batch-type furnaces at The Milwaukee Gear Company.

Because of Surface Power Convection, Milwaukee Gear has much greater metallurgical control and uniformity of product than ever before. High-velocity wind penetrates the tightest loads; assures uniform heat transfer whatever the size, shape, or alloy of the work.

Carburizing case depths are hit right on the button which vary from a few thousandths to 3/16 of an inch. This unusually flexible standard rated furnace line consists of two Super Allcase® furnaces, a horizontal draw furnace, spray washer, DX® and RX® gas generators, and Autocarb® signalling dewpoint controller.

Surface Power Convection cuts cycle times to a fraction.

These advantages only suggest the profitability of Surface Power Convection. Ask your Surface representative to describe the most important development in convection heat transfer in 20 years.

Write for Bulletin SC-182.

SURFACE COMBUSTION CORPORATION • 2373 Dorr Street, Toledo 1, O. In Canada: Surface Industrial Furnaces, Ltd., Toronto, Ontario



# integrated CRUCIBLE steel service



Local Crucible personnel provide service in depth, ranging from quick reports on steels available to expert assistance with metal working problems. Average warehouse staff is backed up by Crucible Metallurgists who, although located at mills, will travel.

106

THE IRON AGE, December 17, 1959

m

Here's by Cr starts steels comple neers, tenand availa wareh (1) L 16,000 all gra (2) B plete ! acteri fabri accoun omme (3) A usual servic steels, (4) A dev elo exacti

metall plant of the recent service steels. The recent house answ quickle Why

Why steel advan Crucil Dept. Squar

STOCK

Keeps on loca cialty the Cri to pla on the ing lis

Branch

Philad St. Pa

# maintains broad range of local customer services

-ranges from in-stock deliveries to metallurgical research

Here's service in depth, made possible by Crucible's integrated operation. It starts with in-stock deliveries of the steels you need and goes on to provide complete technical assistance for engineers, production, toolroom and main-tenance men. And the entire service is available from all of Crucible's 31 warehouses.

Deliveries from local stocks of 16,000 specialty steel items, including all grades, shapes and sizes.

(2) Basic specialty steel data - complete breakdowns on properties, characteristics, as well as machining and fabrication details. (Warehouse account salesmen can frequently recommend the best steel for the end use.)

(3) Metalworking assistance with unusual machining and fabricating problems - by trained, experienced salesservice engineers who specialize in tool steels, stainless, alloys.

(4) Metallurgical research - help in developing steels for tomorrow's more exacting applications from Crucible's metallurgists, who will come to your plant on call.

Here's what one purchasing agent recently had to say about this over-all service: "We need lots of help with new steels - ones we haven't used before. The reason we rely on Crucible warehouses is because their men know the answers - or can get them for us

Why not simplify your own specialty steel purchasing problems by taking advantage of this integrated service? Crucible Steel Company of America, Dept. PL-06, Oliver Building, Mellon Square, Pittsburgh 22, Pa.

#### STOCK LIST

Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.

One Source For All **These Steels** 



Crucible metallurgists will come to your plant, if necessary, to help engineers use new steels or metals like titanium.



Sales service engineers' experience with fabricating, machining problems can solve toolroom and production problems.



Truck drivers speed orders for overnight delivery to you - or earlier if your order is an "emergency."

TOOL STEELS - Water, oil, air hardening, shock resisting, hot work, plastic and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stocks

HIGH SPEED STEELS - Crucible's famous "Rex" steels: Rex Thrift Finish rounds, hot rolled and cold drawn flats and squares, drill rod, forgings, sheets,

STAINLESS STEELS - Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

FREE MACHINING STEELS - Crucible Max-el® rounds, hexagons, plates and brake die steel

ALLOY STEELS - Bars, billets, strip and sheet

COLD ROLLED CARBON SPRING STEELS

DRILL STEELS - Hollow and solid drill steels

ALUMINUM EXTRUSION DIE STEELS

HOLLOW TOOL STEEL



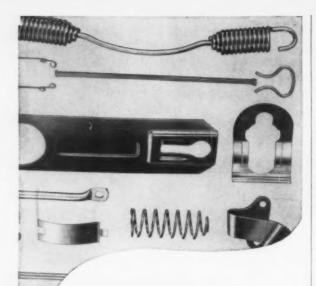
Teletype operators get direct reports on quantities available everywhere in the warehouse system - from Crucible's inventorycontrol computer room.

HARD FACING ROD PLASTIC MOLD STEELS PERMANENT MAGNETS

- and many others

## CRUCIBLE STEEL COMPANY OF AMERICA

Branch Offices and Warehouses: Atlanta • Baltimore • Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Columbus • Dallas • Dayton Denver • Detroit • Grand Rapids • Harrison • Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee • New Haven • New York Philadelphia • Pittsburgh • Portland, Ore. • Providence • Rockford • Salt Lake City • San Francisco • Seattle • Springfield, Mass. • St. Louis St. Paul • Syracuse • Tampa • Toledo • Tulsa • Toronto, Ont.





Let U. S. Steel Wire Spring show you how they can produce the springs you need . . . when you need them. From planning to production, our craftsmen are ready to put their broad knowledge of spring engineering to work for you: The results are springs with many economies and no deviation from specification. Let us demonstrate our ability to turn out your springs and small parts quickly . . . accurately.

No order too large or too small!



## GOSS and DE LEEUW

CHUCKING MACHINES

Tool Rotating
ROSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.

#### BOYNTON AND CO. CONSULTING ENGINEERS

109 N. Wabash Ave., Chicago 2, III.



# PUZZLED...

#### about personnel problems

Dissatisfied with present recruiting methods? The IRON AGE Employment Exchange is the meeting place for employers and men qualified in all phases of metalworking. For advertising rates, write to Chestnut and 56th Sts., Philadelphia 39.









We are maintaining consistent improvement of our facilities, with one thing in mind... providing you with the best possible line of Persuasive Abrasives at the best possible price.

Evidence of this can be seen here.

The new Toledo addition is completed, providing us with necessary additional shipping room and better flow of basic materials.

Our new laboratory at Cleveland is complete and functioning in the direction of closer quality control.

Most importantly, ground has been broken on our new 16,000 square foot Cleveland addition. This will house electric melting furnace facilities producing 12,000 pounds of finished steel per heat. Other equipment includes modern conveyors, heat treating furnaces, tanks, and crushers.

All of these improvements add up to further your confidence in CLEVELAND as a central source for all types of metallic abrasives.

For further details, call in our nearby representative or send for our Catalog No. 159.

CLEVELAND is the name and the place for PERSUASIVE ABRASIVES



#### the CLEVELAND metal abrasive company

GENERAL OFFICE: 888 East 67th Street • Cleveland 3, Ohio • PLANTS AT Howell, Michigan; Toledo; Cleveland

World's Largest Production Capacity

Teletype: CV 901





... where a little heat generates a lot of light! We're in Cambridge, Ohio, at VCA's modern Research Center and Pilot Plant. Here is where answers are found to all manner of questions about ferroalloys and their use.

Although the Pilot Plant is only one part of VCA's Research Center, its function is most important to our customers. For here melting equipment of all kinds helps develop new VCA processes and products, in addition to solving direct customer problems. Each year "hundreds of heats" are melted without thought of selling price or profit.

This special service is just another reason why, "There's more in the Vancoram Green Drum than you can ever see!" Let these and other special services go to work for you. Call or write your nearest VCA office. Vanadium Corporation of America, 420 Lexington Avenue, New York 17, N. Y. • Chicago Cleveland • Detroit • Pittsburgh



"Yes this was a modern shop in 1939 -- but..."



## Why wait for new machine tools?

#### Now you can buy them out of increased earnings

Planning for the future is sound policy. But if you still have old-time machines that can't compete with the newer, more efficient equipment, then the future is already here!

Lost profits can't be replaced. But obsolete equipment can—and should be replaced before losses mount higher!

The lack of "normal" cash reserves no longer forces you to wait—to put off until some future date the savings...and earnings...that can start right now. Why not take advantage of Gisholt's Leasing and Extended Payment Plans? Either one will enable you, without tying up important

GISHOLT

Madison 10, Wisconsin

ASK YOUR GISHOLT REPRESENTATIVE ABOUT FACTORY-REBUILT MACHINES WITH NEW-MACHINE GUARANTEE capital, to put these more efficient producers to work on a "pay-as-they-earn" basis...and give you a running start when you need them most.

More and more forward-looking executives are turning to our leasing and extended payment plans as the best kind of future planning.

#### Ask for this important bulletin

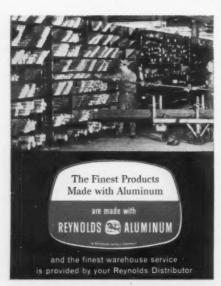
"What You Should Know About Buying and Leasing Machine Tools" is an authoritative booklet which discusses the facts about depreciation, tax angles and details of this timely subject. Use the coupon to get your free copy.



۰	
	Gisholt Machine Company 1215 E. Washington Ave., Madison 10, Wisconsin
	Without obligation, please send your Bulletin $1173$ with details regarding leasing and extended payment plans.
	NameTitle
	Company
	Address
	CityZoneState



"I made warehouse space into working space . . . by relying on the Reynolds Distributor for all my aluminum stock."



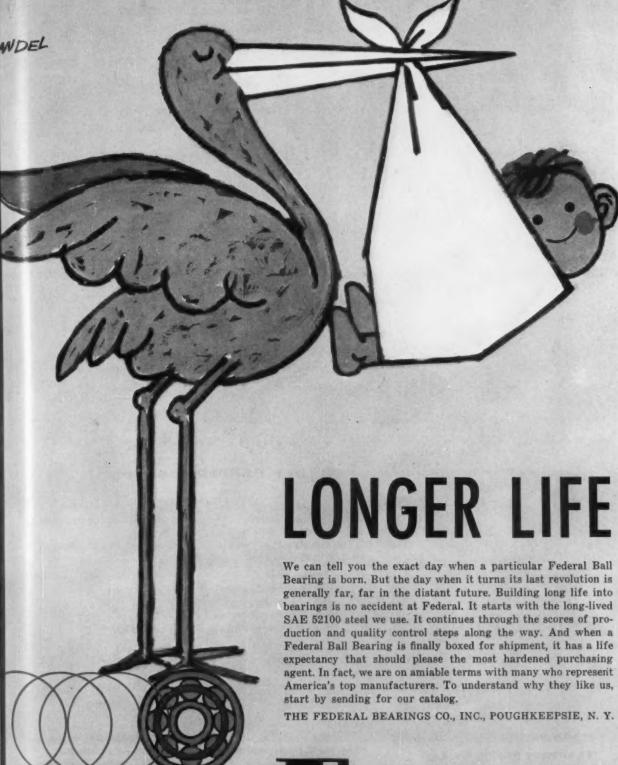
You couldn't possibly carry every alloy and size of aluminum you might need. That's why your Reynolds Distributor is at your service. He can . . . and does!

He can often cut your fabricating costs by supplying the exact alloy for fastest machining . . or by providing the size that means minimum scrap. Even more than that, he saves you floor space by stocking a complete selection of aluminum products you might need . . . in quantities you might call for. You never have to carry a surplus of aluminum that costs money every day it's not used. Your Reynolds Distributor has it, and he can get it to you fast!

Watch Reynolds TV shows—"ALL STAR GOLF",
"BOURBON STREET BEAT" and "ADVENTURES IN PARADISE"—ABC-TV

# FOR FAST DELIVERY OF ALUMINUM, CALL THE REYNOLDS DISTRIBUTOR

Check the yellow pages of your telephone directory, under "Aluminum"

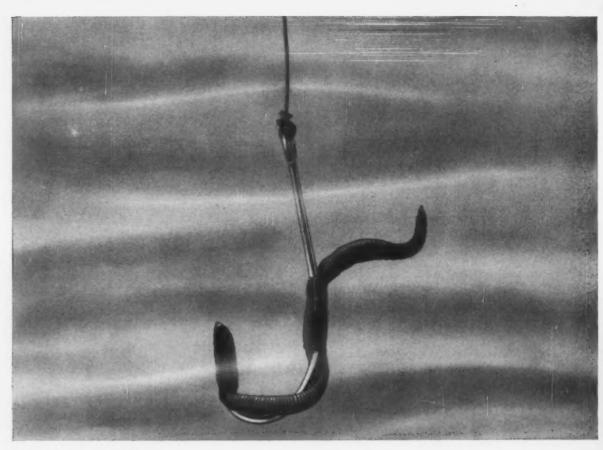


FEDERAL ON FILM -A 16 mm. color sound film takes you through our 400,000 sq. ft. plant. Loaned free. Just ask for it.

# ederal



One of America's Largest Ball Bearing Manufacturers



Machine Tool Buyers:

the man who needs

a new machine tool

is already paying for it

#### Beware the fallacy of the "PAYOFF PERIOD" concept

The basic flaw in the "Payoff, Period" approach, commonly used in making decisions on the replacement of capital equipment, is that, when used, there is no payoff.

The arbitrary selection of a payoff period can be little short of absurd, as is shown by the following example.

#### Hypothesis

- (1) Management objective -2 year Payoff
- (2) Cost of New Equipment \$20,000
- (3) Annual Savings Now \$5,000
- (4) Projected Rise in Savings Each Year \$500

#### Decision

Postpone replacement for 10 years, when investment signal will come up.

#### Result

Avoidable costs incurred by postponement - \$72,500

#### Secondary Result

Projected cost of equipment in 10 years — \$35,260. Postpone replacement for approximately 15 more years. Ad Infinitum.

Does Jones & Lamson offer a positive approach; a realistic, workable formula that is free from fallacies such as this? Yes! Write today for complete information.



JONES & LAMSON Machine Company, 511 Clinton St., Springfield, Vt.

Turret Lathes • Automatic Lathes • Tape Controlled Machines • Thread & Form Grinders • Optical Comparators • Thread Tools

Pro

Sol

Eng rest Cal

# thermal thicket

**Problem:** The heat barrier which now hinders hypersonic aircraft and missiles.

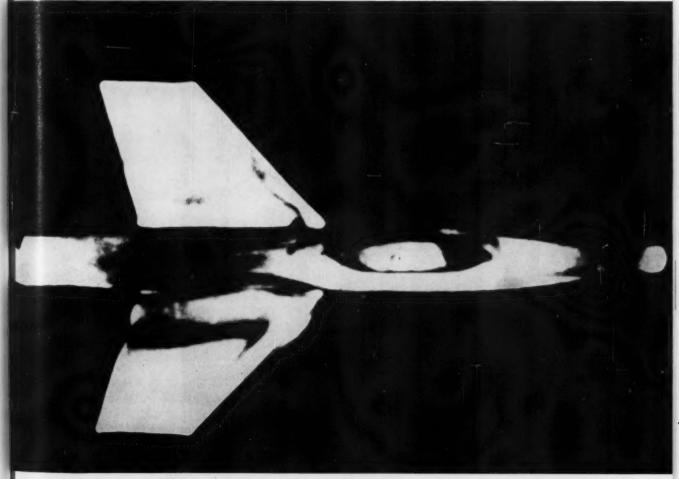
Needed: Dependable high temperature alloys for structural components.

Solution: Find the right alloys that are easy to forge and machine and are truly uniform.

**source:** Predictable performance Carpenter alloys made by the exclusive Mel-Trol, VacuMeltrol and Consumet melting processes.

Engine builders find them ideal for many critical parts. Forge shops report improved forgeability resulting in better finishes requiring far less machining. Work goes faster. Rejects are fewer.

Call your local Carpenter Representative for the whole story about predictable performance alloys and how they can benefit you. The Carpenter Steel Company, Reading, Pa.





Carpenter steel

The Carpenter Steel Company, Main Office and Mills, Reading, Pa. Alloy Tube Division, Union, N. J. Webb Wire Division, New Brunswick, N. J. Carpenter Steel of New England, Inc., Bridgeport, Conn.

TOO BUSY! How could anyone expect him to give up a few hours a year for a health checkup? Every hour of his time is valuable!

TOO THRIFTY! Why spend good money for a checkup? The doctor might not find anything wrong! How extravagant can you get?









TOO HEALTHY! He's never been really sick a day in his life and he never felt better than he does right now! Why bother with a checkup?

smarr enough to know that anyone can develop cancer, no matter how well he may feel... that delay in going to the doctor has caused thousands of needless cancer deaths... that his best cancer insurance is to have a thorough checkup every year and, between times, to keep on the alert for Cancer's 7 Danger Signals.

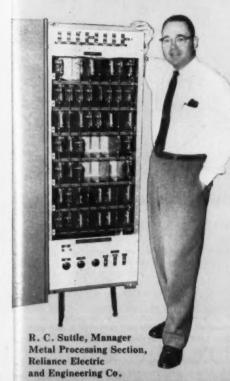


Learn how to guard yourself against cancer. Call your nearest American Cancer Society office or write to "Cancer" in care of your local post office.

Space for this message was contributed by The IRON AGE as a public service.

THE I

"Reliance V\*S drives give American Can accurate system control for highspeed production."



"Precise system control for acceleration, deceleration and shearing is a vital contribution to this cut-to-length tin sheet line. A VSC voltage regulator controls acceleration on the unwind and leveler sections, and provides stepless speed changes. Unwind tension is accurately controlled by a VSR current regulator...and the entire drive is powered by Reliance D-c. motors.

"The speed of the shear is matched to the line by photoelectric loop control, maintaining loop position and assuring accuracy.

"Surface defects in the sheet are picked up visually—pin holes electronically. Mechanical gauges check uniform thickness. Rejects are dropped automatically following the shear. Automatic counting cuts handling time as the usable sheets are stacked on pallets."

These lines were developed by the F. J. Littel Machine Company, Chicago, and American Can Company and are installed in Canco Division plants.

Reliance engineers are ready to help you as they have many others, with a sound understanding of system problems and solutions. Consult your Reliance sales engineer . . . or write today for Bulletin Number L-2505 for complete information.

Product of the combined resources of Reliance Electric and Engineering Company and its Master and Reeves Divisions

### RELIANCE ENGINEERING CO.

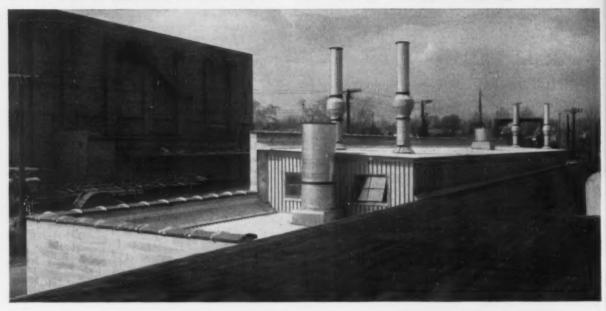
DEPT. 212A, CLEVELAND 17, OHIO Canadian Division: Toronto, Ontario Sales Offices and Distributors in principal cities



Duty Master A-c. Motors, Master Gearmotors, Reeves Drives, V★S Drives, Super 'T' D-c. Motors, Generators, Controls and Engineered Drive Systems.



# FINISHING SYSTEMS...



# Stout Sign Company Eliminates Production Bottleneck with Conveyorized Paint Baking Equipment!



In the two ovens above, installed at Stout Sign Company, St. Louis, Mo., uniform drying is accomplished by four recirculating zones in each oven. Hot air is forced across the oven by pressure and suction controlled by banks of narrow, vertical apertures in the oven walls which extend from floor to ceiling. These narrow apertures assure even distribution of hot recirculated air, and cause the air to flow horizontally through the sign racks and over the work. The direction of air flow is reversed in each successive zone. Air is recirculated at the rate of 13 oven volumes per minute.

the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

Mahon engineers were called in to solve a paint-baking bottleneck in the production of metal signs painted with the silk screen process. This application process necessitates stacking freshly painted signs in a horizontal position, with only two inches of air space between, in specially built racks. Stout Signs had previously been baked in this manner in batch-type ovens.

The solution arrived at by Mahon engineers was two parallel tunnel-type, conveyorized ovens built as a single unit adjacent to the plant. Each oven was provided with independent temperature and conveyor speed controls and was designed to utilize existing sign drying racks which were modified and adapted to conveyor use.

The Stout Sign Company is now able to control temperature and timelength of the drying and baking process to meet any finish requirements... they are relieved of much manhandling of racks, and are free from excessive paint fumes and dust and lint troubles; production flows smoothly, and the quality of finish on their product is vastly improved.

The enthusiasm of a satisfied customer is best evidenced by the following excerpt from a letter recently received from Stout Sign Company: "Let me congratulate you and your entire engineering staff on an accomplishment beyond our expectations."

When you consider new finishing equipment or processing equipment of any type, you, too, will want to discuss your requirements with Mahon engineers.

THE R. C. MAHON COMPANY • Detroit 34, Michigan Sales-Engineering Offices in Detroit, New York, Chicago, Les Angeles and San Francisco

Engineers and Manufacturers of Complete Conveyorized Finishing Systems: Metal Parts Washers, Metal Cleaning and Rust Proofing Machines, Conveyorized Cleaning and Pickling Machines, Dry-Off Ovens, Spray Booths, Electrostatic Spray Enclourers, Flow Caaters, Dip Coaters, Finish Baking Ovens, and Paint Stripping Equipment; Core Ovens, Soldering Ovens, Dehydrating Ovens, Heat Treating and Quenching Equipment for Aluminum and Magnesium, Dust and Fume Control Installations, and Many Other Units of Special Plant and Production Processing Equipment.

See Sweet's Plant Engineering File for Information and Representative Installations, or Write for Catalogue A-659

MAHON

"The

"For

"The

THE

tion of l in excep "Let

checks o



# The most rigid roll specifications can be met with National's modern facilities,"

says Jack Russell, Foundry Superintendent

"The modern equipment now installed at National gives us many checks on quality control in all steps of roll production.

"For instance:

- Flexibility gained by our wide range of furnace sizes permits casting rolls to meet your individual needs.
- Automatic heat treating and quenching equipment with electronic controls assures that more exact physical properties can be attained.
- Testing of steel rolls with the latest in ultrasonic equipment before heat treatment and again prior to shipment assures metallurgical soundness and freedom from flaws.

"These and other steps in the manufacturing, testing and inspection of National rolls—both iron and steel, plain or grooved—result in exceptional performance in rolling mill operations.

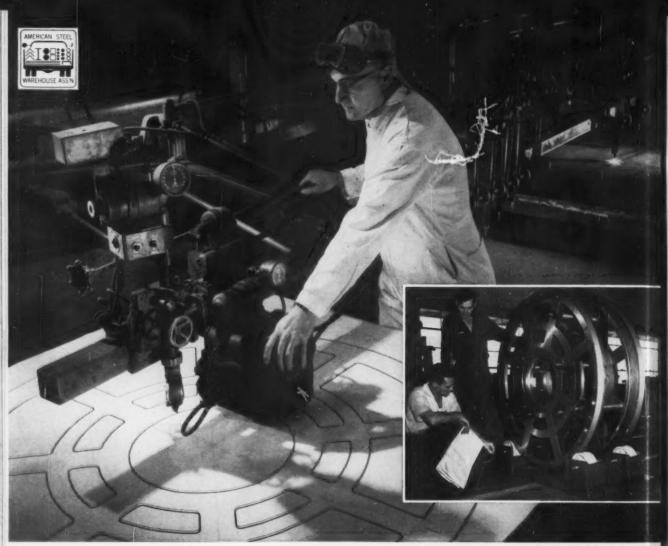
"Let National rolls prove this in your stands."



#### **GENERAL STEEL CASTINGS**

**National Roll & Foundry Division** 

Avonmore (Westmoreland County) Pennsylvania
General Steel Castings Corporation: General Offices, Granite City, Ill.
Plants: Granite City, Ill.—Eddystone, Pa.—Avonmore, Pa.



Precision electronic-eye flame cutting on this multiple welder comparated many costly hours by eliminating virtually all subsequent machine.

# Extra Care at "The Department Store of Steel assures accurate processing of your orders

• When you order flame-cut steel at your J & L Ware-house you receive many cost-free dividends.

Torches are carefully aligned to assure flame-cut edges are perpendicular to plate surfaces.

Slag is removed to facilitate easier grinding or planing. Electronic-eye templates are checked and double checked to insure adherence to your specifications. Inside cutouts are pierced to provide you with maximum usage of the inside slug. Careful gas pressure and speed adjustments are made to give maximum smoothness of cutoften eliminating the need for edge machining. Edge are painted with the proper grade identification color to help you avoid errors in your plant.

Extra care, yours at no cost when you purchase you steel from the Department Store of Steel, can save you time... and save you money.

# J&L Steel Warehouse Division

CHICAGO • CINCINNATI • CLEVELAND • DETROIT
HAMMOND • INDIANAPOLIS • LANCASTER • LOUISVILLE • MEMPHIS
NASHVILLE • NEW ORLEANS • NEW YORK • PITTSBURGH



- THE OUTLOOK FOR CAPITAL SPENDING is bolstered by the latest IRON AGENational Industrial Conference Board survey of capital appropriations. The nation's metalworking companies have approved
  capital expenditures 115 pct over a year ago. Delays in carrying out spending plans, caused by the steel strike, only
  mean that a larger backlog of funds has been created for 1960.
- IN THE CRITICAL STEEL MARKET, watch alloy plate as a major producement problem through all the first half of 1960. It's so critical it will rank with sheet products in scarcity. Producers indicate they are already sold out through June on some grades. Even worse news for users, the market appears to be gaining strength.
- THE APPLIANCE MARKET IS CONTINUING TO make gains in all products over last year's production and sales. But the comparatively new products that are supposed to ease the housewife's burden even more are the big sellers. For example, dishwashers lead all other appliances in sales gains--up some 37 pct over 1958. By comparison, refrigerators are up 26 pct.
- ALUMINUM HAS A NEW BID TO close the economic gap on tinplate in competition for the big can market. A new impact extruder making 120 beer cans per minute is being used by one brewer.

  And you get one cent refund for your used cans. A new unit with an even faster rate of production is past the drawing board stage.
- DIP IN HOUSING STARTS NEXT YEAR will hurt the market for builders'
  hardware, appliances and other items that go into homes. The
  drop in housing will be most severe in early 1960, when tight
  money will take a heavy toll. Offsetting the downturn in housing starts, industrial and commercial building will improve
  next year.
- LOOK FOR ONE OF THE TOP RANKING steel mills to announce plans for a vacuum degassing unit any day now. Installation will be a major step toward degassing tonnage products.
- THE PLASTICS INDUSTRY IS STILL some distance away from any major breakthrough into the much-sought automotive market. Automakers
  are interested, and use many applications. But they think
  the automation machinery and techniques still must be developed to satisfy the production rates of the auto industry.

adjust-

cut-

Edge

color to

e your

ve you

of Steel



#### Here are the savings achieved in this Dynapak Application:

- . MATERIAL: 60%
- TOOLING: 50% of the cost of conventional forging dies
- MACHINING: Reduced by more than 50% due to forging tolerances of ½ in. and elimination of draft angle.

#### PLUS

- PRODUCTION RATES: 70-80 per hour
- SUPERIOR PHYSICAL CHARACTERISTICS: Greater strength, uniform and controllable work-hardening, Grain Size No. 11.

Dynapak, industry's first operational high-energy-rate machine tool, offers a breakthrough in metalworking's long-sought goal to produce forgings that can be used with little or no machining. This flange is just one of many forgings now being produced commercially by Dynapak. For complete information regarding application of pneumatically-energized Dynapak in your forging, extrusion, forming, or compaction operations, write, wire, or phone:

# DYNAPAK

CONVAIR / A DIVISION OF GENERAL DYNAMICS CORPORATION

1243 Transit Avenue, Pomona, California · Telephone: NAtional 3-1561

offer of the

Nov tion

Jan. befo

pitel iron port Hari work

The

offer

agai

prot

deal

ques

tives

these ful t

pora

proa Brea

Unit

THE

Ir

# Steelmakers Go All-Out to Sell Workers on Wage Offer

Industry is using a variety of methods to explain its contract offer to members of the union.

But in January balloting, the steelmakers face an uphill battle.—By G. J. McManus.

 Steel is going all-out to sell union members on the industry's contract offer.

The mills are making the most of their rare chance to put the issue before the workers. They are spelling out the terms of the offer made Nov. 15 with everything from national ads to face-to-face talks. This is the offer steelworkers will vote on sometime between Jan. 6 and Jan. 21, unless the strike is settled before then.

Uphill Battle—In making their pitch, steelmakers are bucking an ironclad tradition of member support for the organization. Six Taft-Hartley elections have all seen workers reject management offers. The combined margin was something like nine to one against the offers (counting abstentions as against).

In addition, there is the special problem of selling an offer that deals with such emotion-packed questions as work schedules, incentives and general efficiency. The union organization has wrapped these questions up in direct, colorful terms.

Union's View—"There is good reason to believe that the steel corporations will now try another approach to force you to swallow their 'Break-the-Union' proposals," wrote United Steelworker President McDonald on Nov. 23.



CIVIC DRIVE: George E. Placcus, Jr., vice-president-industrial relations, Jones & Laughlin Steel Corp., discusses meaning of steel industry's contract offer before Aliquippa, Pa. Chamber of Commerce. Dave McDonald, president of USWA, (below), registers his opinion of the offer.



"If the companies are given the free hand they demand," he said, "as many as one out of every five basic Steelworkers—or more than 100,000—could be pushed out of their jobs. . . ."

Observers feel Dave McDonald has gotten through to workers with his warning against job slashing and union busting. At the start of negotiations, steel workers were supposedly in no mood to strike for higher pay. Since then, efficiency proposals are credited with hardening worker opposition to company offers.

Campaign Plans—For management, this swing weakens what was at best a long shot voting position. Nevertheless, the companies are

59

## Significance of the Campaign

■ Officially, the Taft-Hartley voting on the steel companies' "last offer" gives the workers the chance to accept or reject it. It is not binding on the union no matter how the steel-workers vote.

Practically, the vote is not on the last offer at all. It is a vote for or against the union. The union will say so before the ballots are cast. This will come, barring a settlement, after Jan. 6, 1960.

Past Votes — Twenty-two years ago there were quite a few employee elections in the nation's steel mills. The rugged, young, and coltish SWOC (Steelworkers' Organizing Committee) was on the ballot. Throughout the industry, except for "Little Steel," workers were voting for or against the union — officially that is.

Practically, at that time, the workers were voting for or against the steel companies. The outcome was disastrous for the campaign waged by the American Iron and Steel Institute which took ads and radio time to blast the union.

Most election returns ran from 68 percent to 95 percent against the steel firms — and for the union. Not too long after the "Little Steel" (Republic, Bethlehem, Youngstown Sheet & Tube, Inland) strike, elections were held. Again the workers overwhelmingly voted against the steel firms. In these cases, the vote was 80 to 90 percent or more in favor of the union.

The Outlook—Soon, there will be a vote for or against the union. Privately, most steel officials believe the work-

ers will support solidly the union and vote against the last offer. A few steel people publicly insist the workers will turn down the union.

Most National Labor Board elections under T-H on "last" offers have recorded a 90 percent vote for the union (against the offer). In the steel elections, the general feeling among objective observers is that the union will win a total of about 80 percent.

Of course, the current election campaign may change the voting a little. But if it fits the general pre-election bally-hoo pattern, neither side will change many votes. Most workers will look to the union for direction.

Hard to Convince — Most readers go little beyond the headline and a few paragraphs in pre-election material. This election will be no exception to this rule. It is hardly likely that the complex material in the company letters (with but few exceptions) will be thoroughly read — or understood—by those to whom it is directed.

The 32-page union tome is even in a worse position than the 8-page steel company presentations. It is hardly likely that any worker will get far in such a long detailed and legalistic booklet.

The steel firms want to see for the first time—under T-H
— just how their workers think and how they would vote if given the chance. The union will try to "get out the vote." On the outcome will depend 11th hour attempts to pressure both sides to an agreement.—Tom Campbell.

making a determined try. Nationwide publicity continues as a joint effort of the 11-company group. Individual mills are handling the program at plant and community levels.

According to one mill, the first seven weeks of the injunction period are being used to explain and sell contract offer. The two weeks following Christmas will be used to urge the workers to vote. Most authorities feel that failure to vote amounts to the same as a negative vote. Technicalities of this point are not clear.

Lack of Knowledge — In local efforts, the first big job of the companies is just to reach the workers. Despite nationwide publicity, company letters and other communications, the mills have found that many workers know little or nothing about offer details.

"We asked one of our men about the Nov. 15 offer," says a company official. "We found he didn't even know there had been an offer."

This kind of reaction has driven home to mills the need for simplicity and force in written presentations. In posters, mailing pieces and ads, contract proposals are now being boiled down to the barest essentials. The most modern printing techniques are being used to highlight and clarify issues. Big, bold letters describe benefits.

Too Much to Read—How effective is this printed barrage? Union men scoff at the company program. "These guys in the mills don't have time to read all that stuff," says a union staff man.

It's too soon to get a true reading but there are signs the companies are at least stirring up interest. Great Lakes Steel sent all workers a return card with space for questions on the offer. By last week more than 200 questions had come in.

Plenty of Confusion—However, most of the return cards indicate a need for further enlightenment. The largest number of those responding showed confusion as to the issues. In many cases, the questions in-

ple. ener

volv

ture

the

one

pici

thei

part

com

Cor

radi

F. 1

Boa

and

hav

Lak

own

pos

mill

wor

N

T

mee part expl low were of M J. 1

fore laborate other size ques

ings

fore F chee mad

unic properties

wote that to

THE

volved points fully covered in literature sent workers.

"The union says one thing and the company says another," wrote one man. "Who's kidding who?"

To root out this kind of suspicion, the companies are pushing their message by word-of-mouth. In part, they are working along broad community lines. Republic Steel Corp. has resumed a 10 minute radio series in which President T. F. Paston discusses contract issues. Board Chairman Paul Caranhan and President W. B. MacDonnell have made similar talks for Great Lakes Steel. Other mills have their own programs.

1

0

n

d

2

d

e

a

1-

1-

11

st

d

Meetings With Foremen — But possibly the greatest hope of the mills lies in direct contact with workers by plant supervisory people. Most of the mills have moved energetically to equip foremen for educational work.

Allegheny Ludlum kicked off its program Nov. 19 at the regular meeting of works managers. A large part of the day was taken up with explaining the company offer. Following this, meetings of foremen were held in all plants. In the week of Nov. 30, Company President E. J. Hanley and other top officials toured plants and addressed meetings of supervisors.

Allegheny Ludlum is providing foremen with a manual explaining labor issues. Jones & Laughlin and others are doing the same. Pocket size cards put information on key questions at the finger tips of J&L foremen.

For the industry as a whole, a check of worker opinions is being made by an outside agency.

Union's Plan—On its side, the union says it is making no special promotional efforts in connection with the Taft-Hartley vote.

"We're explaining developments as they happen," says a staffer. "We're not even thinking of the vote yet." He did say, however, that informal district surveys point to overwhelming rejection of the company offer.



SETTLED: Canmakers came to terms with Steelworkers.\* Aluminum next?

# The Circle Closes

Settlement with the can companies was a big step in Steelworkers' strategy.

Aluminum is next, then comes steel.—By R. D. Raddant.

 Signing of a new labor pact by the can companies and the Steelworkers last week was more than just another labor contract.

As part of the Steelworkers' strategy of encircling the steel industry with a ring of settlements, the circle was an important step nearer to being closed. USW President David J. McDonald and his top aides immediately took aim at the aluminum industry and hoped to have the ring nearly complete by this week.

Terms Are Costly—Terms of the contract with the canmakers vary in interpretation. The companies say it adds up to 28.2 cents per hour over three years. The union says it is closer to 36 cents.

Both agree that inclusion of the cost-of-living index may add another six cents. And the pact includes improvements in insurance and pensions and other benefits.

Up Go Prices — It is no secret that many in the steel industry are furious at the terms. Then came the quick announcement that the canmakers would raise prices, with the higher labor costs taking the blame.

This is exactly what the steel industry took a 116-day strike to avoid. And it isn't over yet. What it means is that pressure from the steel companies to hold out for non-inflationary contracts was not as strong as the union's pressure.

The settlement was a break with precedent. In the past, the can companies and union tended to follow the pattern set by the steel industry.

Encirclement of the steel industry started with agreement with Kaiser Steel Corp., followed by contracts in copper. An aluminum agreement would leave steel the only major holdout.

\*Seated, left to right: James Robb, USW negotiator, McDonald, and Warren Lacke, manager of industrial relations, Continental Can Co. Standing: A. Whitehouse, USW negotiator, and E. T. Klassen, vice president, American Can Co.

# Can Market: New Aluminum Bid

#### Bliss Machine Makes 120 Aluminum Beer Cans Per Minute

Aluminum International, subsidiary of two brewers, owns the new, speedy impact extruder.

And it already has a 200cans-per-minute machine past the drawing board stage in development.—By T. M. Rohan.

Citizens of Golden, Colo., were startled several times early this year to see a 260-lb man rolling beer cans around on the sidewalk, and occasionally stomping or jumping on them.

It was Jack Porterfield, chief engineer for Adolph Coors, a local brewery, and Aluminum Internation Inc., a company jointly owned by Coors and Beatrice Foods, Inc., Chicago. The end result of his "frolic" is likely to be deeper penetration by aluminum beer cans into this tinplate - dominated container market.

**Speed Counts** — A new, highspeed impact extruding machine, shown for the first time last week by Aluminum International, will turn out 120, 11 oz aluminum beer cans per minute.

"We've made 15 million aluminum cans already," says Mr. Porterfield, "Ultimately we hope to put in 10 lines here which will turn out 1.5 million cans per year each.

Next Even Faster—"We're planning a new machine which will make them at 200 per minute. It's already past the drafting board stage."

Speaking of his sidewalk "stomp" testing, Mr. Porterfield says, "It must have looked kind of crazy to the people around here. But it proved to me that the aluminum can will work. It's a whole new concept that the can is merely a package and doesn't need all the strength that's in tin cans now.

"But we can't get it across so we're doing it ourselves. The aluminum cans will buckle more easily than a tin can, but even then they won't leak because there's only one seam. They will also hold 100 to 120 lb internal pressure.

A Penny Back—"We are putting draft beer in them, and it's a big seller. We don't charge a premium but do give one cent per can refund on returns, which go into making new blanks."

hop

lion

Bu

ha

pa

art

au

pu

Ja

fu

ne

di

ca

fo

TH

This is not the initial venture into aluminum impact extruding for either Coors or Beatrice Foods, which own the Hawaiian Brewing Co. in Honolulu. They have been using machines, made by the German firm of Herlan, that operate at 60 strokes per minute.

Why It's Faster—The new machine, designed by E. W. Bliss Co., Canton, O., is faster, says Aluminum International, because of a new drive. The Herlan units use knuckle joint drive off the flywheel. The Bliss development has an eccentric driving the ram which gives it a faster approach and return.

To reach their current point of development in the making of aluminum cans Adolph Coors and Beatrice Foods have spent about \$3.5 million.



IMPACT EXTRUDER: Jack Porterfield, right, chief engineer, Aluminum International, Inc.; A. S. Burgoyne, left, vice president, manufacturing, E. W. Bliss Co.; and E. E. Meyer, Bliss sales manager, look over the new, speedier impact extruder Bliss made for Aluminum International.



FAMINE IS OVER: With steel flowing into plants, auto assembly lines are once again rolling.

# Carmakers Aim at Record Output

After losing 700,000 units due to steel shortages, automakers hope to build a record 2.25 million units in 1960's first quarter.

But automakers will need cooperation—and 30 pct of the output—from steelmakers.—By A. E. Fleming.

■ The auto industry, crippled by a bad case of steel shortages, has barely been able to hobble along since 1960 models were introduced. But the pulse-beat of production has been growing stronger in the past few weeks, due to injections of new steel into industry's supply arteries.

This week most of the country's auto assembly plants will again be pumping out new cars. And by Jan. 1 all assembly lines should be functioning in a nearly normal manner.

Miracle Drug—Automotive production specialists confidently predict a complete recovery—if they can continue to get the ingredients for their prescription: Ample doses of steel and long hours of steady work.

Carmakers hope the industrial climate is clear enough to enable them to turn out 2.25 million cars in the first three months of 1960. This would be an all-time high for any quarter of any year. The present record of 2.13 million was set in January-March of 1955.

Need Cooperation—Automakers are certain an extremely lucrative new car market is just waiting to be served. And they're anxious to recoup the 700,000 units lost in the last quarter of this year. Original fourth quarter schedules called for 1.9 million cars. Actual output will be closer to 1.2 million.

Cooperation from the steel industry is a must, however. Steelmakers must be willing to turn over nearly 30 pct of their shipments to automakers in the early stages of 1960. This compares with a normal flow of 15 to 20 pct.

Record Quarter Due? — Ford Motor Co., for example, even though accounting for almost half of its own steel needs, will have to wait about two months before it can start breathing easily. It will be five or six months before it can build up a normal steel inventory.

And the 2.25 million car forecast means the industry will have to produce an average of nearly 750,000 units a month in January, February and March. The present high for one month is 794,000 set in March, 1955.

Ample Capacity—Compact cars will play a major role in the first-quarter surge. About 20 pct of the total will be Ramblers, Larks, Corvairs, Falcons and Valiants.

"Capacity is not a problem," emphasizes G. P. Hitching, manager of Ford's Economic Analysis Dept. "There's sufficient production capacity to provide for both high level consumer demand and addition to dealer stocks."

Six-Month Outlook — The production spurt isn't expected to be a one quarter phenomenon, either. "There's every reason to expect the automobile business will be excellent during the first six months of 1960," says W. D. Newberg, executive vice president of Chrysler Corp. "But steel must be supplied in the needed quantities and kinds, and no other major interruptions must occur in other sectors of the economy."





TOP MEN: Ralph L. Gray (left) is the new board chairman of Armco Steel Corp.; Logan T. Johnston (right) succeeds him as president.

# Armco Steel Names Two to Top Posts

 Ralph L. Gray has been named chairman of the board of Armco Steel Corp. Logan T. Johnston was named to succeed Mr. Gray as president of the firm.

Both men will assume their new posts Jan. 1.

Mr. Gray has been Armco's president since 1956. He has been a member of the board of directors since 1940. Mr. Johnston was elected executive vice president and a member of the Armco board in 1958.

Career Man — A native of St. Charles, Mo., Mr. Gray is an engineering graduate of Washington University. His entire working career has been spent in the steel industry. He was assistant to the president of the Kansas City Bolt and Nut Co. when its name was changed to Sheffield Steel Corp. in 1925.

Mr. Gray was elected president of Sheffield in 1930, shortly after the company became a subsidiary of Armco. He headed Sheffield for 24 years, and was elected executive vice president of Armco in 1954. That year Sheffield was integrated as a division of the company.

A New Division—Mr. Johnston was born in Pittsburgh, and holds a degree from Carnegie Institute of Technology.

In 1925 he joined the staff of Columbia Steel Co. Columbia's steelmaking facilities were located in Butler, Pa., and in 1927 that company was merged into Armco. In 1930 Mr. Johnston moved to Armco's headquarters at Middletown, O., where he organized the firm's railroad sales division and served as its manager.

Sales Director—Mr. Johnston was named Armco's general manager of sales in 1947. In 1952 he was elected vice president in charge of distribution.

He continued to direct all of the company's sales activities after his election to executive vice president last year, and will hold that post until the effective date of his election as president.

#### Fairbanks-Morse Opens New R&D Center Lab

Fairbanks, Morse & Co., manufacturers of large industrial machinery, has opened a new corporate research and development center and laboratory at Beloit, Wis.

Alfons Landa, board chairman, said the company's research budget of \$1.5 million for 1959 will be increased to \$2.5 million for 1960.

The new facility is part of a long range planning program aimed at maintaining the company's position in the field it serves. It will serve other companies through which Fairbanks-Morse is affiliated in the Fairbanks Whitney Corp.

#### **Unions Seek Revenge**

COPE, the political arm of the AFL-CIO, is preparing an all-out drive to elect a pro-union Congress next year. (COPE is the Committee on Political Eduction).

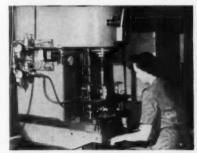
Voting records of every member of the Congress are being drawn up. These will show "right" and "wrong" votes (from the union's point of view) of every Senate and House member. These "right" and "wrong" charts will be distributed to all locals, with recommendations that "wrong" Congressmen be defeated at the polls next November.

#### Social Security May Be Liberalized in 1960

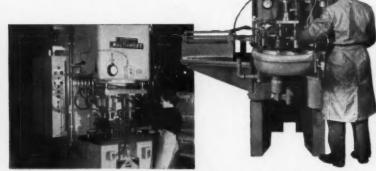
Congress probably will liberalize Social Security again in 1960. Both political parties agree that an election year is a good time to broaden the program. Rep. Aime Forand, will try to include his plan for hospitalization and medical care for oldsters. But leading Democrats in the House say the time is not ripe for adopting this plan.

Likely revisions: End the requirement that age 50 is the minimum for qualifying for disability benefits; end the six-month waiting period before benefits can be paid to disabled persons who have tried and failed to get work.

Which of these MULTIPRESS ideas will save you money...NOW?



Toy maker forms 1000 parts per hour
... 8-ton Multipress forms metal toys faster, at less
cost for Mattel, Inc.



Motorola speeds production...with 100-ton Multipress that precision-punches up to 450 holes at a time in plastic TV chassis bases.

**Dormeyer triples production** of food mixer parts . . . cuts scrap loss, too, with 8-ton Denison Multipress-12-station index table.



Waterman boosts output 800% with 1-ton Multipress that "angles" precision C/C pen parts fast, at low cost



Cuts cost 73% on sub-assembly of specialty products at George S Thompson Corp with 4-ton Multipress. Savings - 11¢ per unit.



Prints Electronic circuits 3 times as fast at Barry Process Co. with 4-ton Multipress. Controlled timing and pressure assure uniform carbon ink deposit on each printed resistor.



Auto-lite automates assembly of over 150 different types of spark plugs with a battery of 3 Multipresses operating around a 48-station index table.



Production up 33% at Cleveland Graphite Bronze
- where 25-ton Multipress compresses soft carbon
cores at the rate of 100 per hour.



Trimming rubber flash twice as fast...4-ton Multipress with 6-station index table trims flash from 2400 molded rubber parts per hous. Old method called for 3 operations.

Time and money savings like these are only a few of hundreds that Denison Multipress can help you make in keeping ahead of competition today.

But modern competition means more than simply faster production. That's why Multipress plus-benefits are so important.

Multipress on your job can mean larger tool and die life . . . less scrap . . . higher product quality . . . minimum maintenance . . . extra operator safety. Multipress can give you the competitive edge.

Isn't it time you looked into Multipress? Your Denison Hydraulic Specialist can show you where and how Multipress will pay off best on your next job.

TOOLING AND PRODUCTION MEN! WRITE FOR YOUR COPY of the new DENISON MULTIPRESS all-line catalog 120-D. Specifications and application data for all-industry uses. Multipress 1 to 75-ton capacities.

#### DENISON STOCKING BRANCH OFFICES

- Los Angeles (Hawthorne)
- Chicago
- Detroit
- (Birmingham)

   Atlanta
- HoustonNewark
- (Clark)
- (Clark)
   Cleveland
- Columbus
   (Home Office)

Denison, Denison HydrOlLics, and Multipress are registered trademarks of Denison Eng. Div., ABSCO

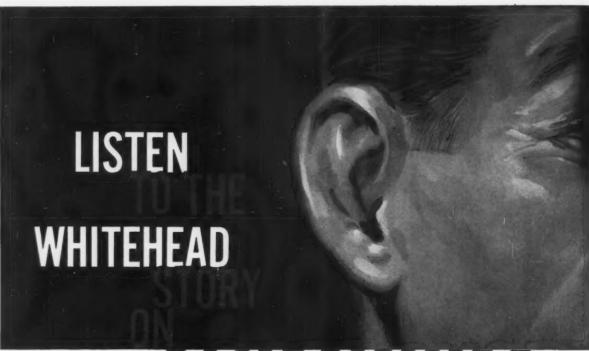


HYDRAULIC PRESSES . PUMPS . MOTORS . CONTROLS

#### **DENISON ENGINEERING DIVISION**

American Brake Shoe Co.

1242 Dublin Road . Columbus 16, Ohio



# ALUMINUM

Full and complete stocks-Technical help to meet your needs

The Whitehead service story on Aluminum is unusual. It accommodates the engineer who requires technical help in the planning stage. Then, too, the manufacturer or fabricator who requires the supplementary items-welding rod and fasteners to go with sheet; fittings and valves for the pipeline; etc. Truly a one-stop service from Alcoa's largest distributor in metals and technical help in the East.

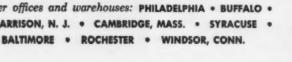
Stocks of over 700 sizes of rod, pipe and tube; almost 500 items of sheet; thousands of fasteners and even 18 sizes of a specialty item like tool and jig plate, make Whitehead a true "Supermarket" of aluminum, no matter what your requirements.

Since we stock all the principal corrosion resistant materials-Copper Alloys, Brass, Bronze, Clad Metals, Stainless Steel, Monel, Inconel and Plastics, too-we can and do give unbiased opinions on the right material to do the job. Anytime you need anything in the corrosion resistant line, you'll find it pays to call Whitehead first.



303 WEST 10th STREET, NEW YORK 14, N. Y.

- Other offices and warehouses: PHILADELPHIA . BUFFALO .
  - HARRISON, N. J. . CAMBRIDGE, MASS. . SYRACUSE .





# Depreciation Reform: Industry Agrees on Need, Not Methods

Moves to revise depreciation laws next year are now getting underway.

Industry is united on the need for reform but differs on the shape it should take.

This survey of metalworking's depreciation practices tells what changes different groups suggest.—By E. C. Beaudet.

Next year Congress is expected to vote on legislation designed to change the way business is now permitted to write off the cost of plants and equipment for income tax purposes.

Either as a separate bill or part of an overall tax-reform measure, some action on present depreciation laws seems likely.

No Incentive—The reasons: The amount of out-dated and worn-out production equipment is reaching alarming proportions in American plants. Inflation has skyrocketed the cost of new equipment. And business, handicapped by inadequate laws, lacks the incentive to modernize.

Coupled with this is the threat of foreign competition. Western European countries, bursting with new industrial strength, are forcing the U. S. out of world markets and putting pressure on those at home. Russia in its economic offensive boasts of its post-war industrial buildup.

With labor costs 25 to 50 pct higher than those abroad, plant modernization looks like the best and perhaps only basis on which American industry can compete.

Sympathetic Treatment-At re-

cent hearings of the House Ways and Means Committee on Depreciation, congressmen seemed sympathetic to these views (The IRON AGE, Dec. 10, p. 61).

But what form, if any, depreciation revision will take is still uncertain. With President Eisenhower pushing for a balanced federal budget in 1961, any loss of revenues may be questioned by Congress and the Treasury Dept.

Political Factors—Also, in a election year, Congress may be wary of any tax reform, which may

## Writeoffs in Foreign Countries

Depreciation practices in most foreign countries are more liberal than those in the U. S.

This summary shows than many have faster writeoffs and an initial allowance as an incentive toward modernization.

Austria—An initial 40 pct allowance may be taken the first year with a standard 10 pct rate after that.

Belgium—Writeoffs average 15 pct annually.

Canada—All depreciable property is grouped into classes. Production machinery can be written off at a 20 pct declining-balance rate.

Denmark—Initial allowance system similar to England's. About half the cost can be written off in 5 years. Top for any one year is 33½ pct.

**England**—Initial allowance of 30 pct the first year with later writeoffs more rapid than those in the U. S.

France—Anti-inflation system permits use of an inflation coefficient and depreciation to be stated on a replacement cost basis.

Italy-Anti-inflation depreciation. Incentive allowance for new plants.

Mexico-Ten pct straight-line rate.

The Netherlands—Initial allowance system. Balance determined on negotiated basis. Most equipment can be written off in ten years.

Norway-New plant and equipment can be written off in five years.

Sweden-Five-year writeoff for machinery and equipment.

Switzerland—Twenty-five pct declining-balance rate.

West Germany—Depreciation by negotiation. Machine tools usually can be written off in ten years, with heavier writeoffs in the earlier years.

Source: The National Machine Tool Builders' Assn.



W. H. LOWE, INLAND STEEL: "The problem won't be solved by studies limited to useful life."

seem to benefit only business.

But another stumbling block to depreciation revision is the lack of agreement among business leaders on just how these tax laws should be changed.

In its survey of depreciation practices in metalworking (Dec. 3, p. 81) The IRON AGE asked metalworking executives what changes they favored for improving present depreciation methods for tax purposes.

The survey was directed to company presidents and financial executives—men who follow the financial side of business and know the complexities of depreciation and accounting procedures.

Changes Wanted—Replies came from 241 companies which account for over a half million production workers in the fields of primary metals, fabricated metals, machinery, automotive and instruments.

Only a handful were satisfied with present depreciation methods. The vast majority of financial executives were dissatisfied. The changes they want varied according to the business they're in, the problems they face and their personal economic views.

Main Points—In the main, however, their proposals centered around three major points:

- The need for faster writeoffs based on growing technological obsolescence.
- 2. Some adjustment for the erosion of capital by inflation.
- Management's better ability to use write-off rates consistent with the needs of the business.

Freedom of Choice — The last point was favored by F. S. Blackall, Jr., president of Taft-Peirce Mfg. Co. "We believe," he says, "that any taxpayer should be allowed to depreciate at any rate he chooses."

Then he adds, "We recognize this is probably politically inexpedient, but we should favor the closest possible approach to this idea."

Joining him in this view is, Ernest Davis, vice president, of the Kickhaefer Mfg. Co. "I see no reason for not permitting business to use any useful life, and depreciation rates, it chooses, providing they are consistent with themselves," he says.

As a deterrent to the abuse of

the method he points out: "Firms using rapid write-offs would be penalizing themselves if equipment was used long after it was depreciated."

Canadian System—A vote for the system now being used in Canada was offered by F. O. Krumm, Whiting Corp.'s controller. Much of industry, he says, is forced to hold on to obsolete equipment because of unrealistic depreciation allowances.

"It is my opinion that the Canadian declining-balance method and rates for all classes of equipment should be adopted for both book and tax purposes," he reports.

n

10

in

Pretty much along the same line is the reasoning of George J. Becker, treasurer and controller of the Giddings and Lewis Machine Co. As a member of the National Machine Tool Builders' Assn., his company would like to see Bulletin F dropped and the substitution of the bracket or class rate approach to depreciation.

IRS Questioned—But he goes on to make another point mentioned quite frequently by others. "We feel the Internal Revenue Service spends



E. P. HEILES, SURFACE COMBUSTION: "Equipment life should be based on experience of the user."



V. H. SAMSON, BUHR MA-CHINE TOOL: "Discontinue Bulletin F. Use economic life."

too much time auditing depreciation. If companies had assurance that their book depreciation rates would not be challenged, they would be established in a very realistic fashion," he says.

Inland Steel Co.'s treasurer, W. H. Lowe, feels the main problem is inflation and the adoption of the LIFO principle is the best way to fight it.

"We want to stress that we do not think the depreciation problem today will be solved by studies limited to useful life," he says.

"The upward pressure on prices, with its inflationary implications can be greatly minimized, and the same amount of cash flow generated, by permitting current cost allowances for depreciation each year or at the time of replacement."

More on Inflation — Inflation's effects were also hit by the Budd Co.'s comptroller, C. G. Schiez. "Present methods use old dollars in profit and loss for depreciation. But all other items are expressed in current dollars.

"Depreciation should be computed on the basis of the present

#### DEPRECIATION

This is the third of a threepart series of articles on depreciation.

The first, a survey of the depreciation practices of 240 metalworking companies, appeared in the Dec. 3 issue.

Last week's issue, p. 61, carried a report on the depreciation hearings held by the House Ways and Means Committee.

purchasing power of the dollar compared to its value at the time equipment was purchased."

**Bulletin F Hit**—Bulletin F, the Treasury Dept.'s guide to determining the useful lives of equipment for depreciation purposes was hard hit by many respondents to The IRON AGE survey.

"Bulletin F is out of date on our products," says W. P. Hahn, secretary-treasurer of the Tinius Olsen Testing Machine Co., "and we have so informed the (Internal Revenue) Commissioner."

"Junk Bulletin F—and allow rates to be set on the severe usage to which equipment is subjected," suggests Cliff W. Estes of Texas Foundries.

V. H. Samson, controller of Buhr Machine Tool Co., feels pretty much the same way. "Discontinue Bulletin F. Use depreciation periods which reflect economic useful life rather than physical life," he says.

More specific, Lewis F. McNitt, assistant to the president of Midland Ross Corp., would like a reduction of rates in the regulations governing the estimated life of machinery, welding and riveting equipment, electrical equipment, and office furniture.

While metalworking executives may disagree over the methods, there's no question about their unanimity on the need for a revision of present depreciation regulations.

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



E. DAVIS, KICKHAEFER MFG.: "Firms using too fast write offs would only penalize themselves."



L. F. McNITT, MIDLAND-ROSS: "We favor a reduction of regulations governing estimated life."



H. E. BOEHM, TOWMOTOR CORP.: "Let's have more latitude in assessing effects of obsolescence."



UNILOY STAINLESS STEELS Treasured are the household items made of lustrous stainless steel. They shine with a wipe and keep their high quality appearance in everyday service...dishwasher detergents cannot mar their distinctive beauty. Markets for these items are ever-expanding, creating a brighter and brighter sales picture for manufacturers.

For Stainless Steel that provides ease of fabrication and fine finish—made to your exact specifications—specify Uniloy.

# UNIVERSAL CYCLOPS STEEL CORPORATION

STAINLESS STEELS . TOOL STEELS . HIGH TEMPERATURE METALS

abo

sui

the

ne

thi

ha

as

# Building Market in for a Change

Dip in housing starts next year will have an adverse effect on the building market.

But gains are expected for commercial and industrial construction.

• If you sell the construction market, get ready for some changes. Home-building will taper off in the early part of 1960. But there should be an upturn in industrial and commercial building.

New housing starts will drop about 10 pct next year, government experts predict. Home construction will probably total 1.2 million units —a drop of 125,000 homes below 1959's expected level.

Tight Money Hurts—The main cause will be the present shortage of mortgage money. Even now, the government is moving to ease the money pinch in housing. Through the Federal National Mortgage Assn. better known as Fannie Mae), the U. S. is buying government-insured mortgages from lenders.

This puts the lenders in a position to make new home loans. And it encourages new housing starts.

If tight money eases later in '60, the home-building rate will climb. Housing starts in the last half of next year could bring 1960 close to this year's near-record rate.

Sales Troubles — But until the outlook improves, the housing dip will mean fewer sales of builders' hardware, appliances, and other items going into homes. For these suppliers, the sales drop could be as high as 20 pct.

Off-setting this bad construction news, is some good news. Both industrial and commercial building are increasing steadily. Further gains are expected next year.

There was some lag in September as the industry felt the effects of the steel strike. But this was only a temporary halt. In the new year the uptrend will resume.

Slower Comeback—This rise in industrial construction is overdue. New plant construction took longer to come back after the 1958 recession than expected.

After previous business turn-

downs in 1949 and 1954, it quickly followed industrial output back up. This time the lag was longer—lasting about a year after the low point of the recession.

Both industrial and commercial building will top this year's levels in 1960, according to F. W. Dodge Corp. estimates. Volume of manufacturing building should improve 20 pct, with commercial building advancing 6 pct.

## Industry Shuns Holiday Gifts

 Business gift-giving this year won't be lavish. In some cases it may be entirely absent.

Poor business won't be the reason, as it was in 1958. This year all the fuss over TV and radio payola is putting a damper on giving—and getting. So is the new Labor-Management Reporting and Disclosure Law.

Both management and labor are adopting a hands-off policy about holiday spending.

Handle With Care — Industrial companies are flooding the mail with requests that suppliers skip the gifts this year. They are telling employees to use judgment about taking gifts. And they are urging that gifts of sizable value should be rejected.

Unions, too, are concerned about the right's and wrong's of seasonal donations. Some misdirected thinking brought a response from Secretary of Labor Mitchell. He points out the new labor law doesn't prohibit the holding of parties where gifts and entertainment are provided by an employer or a labor organization.

Charity Suffers—The law isn't intended to discourage the exchange of Christmas presents between employers and union members, he adds.

The Secretary has even received letters from charities saying unions may be holding back on holiday donations. Apparently there is a belief such donations are forbidden. Not so, says Mr. Mitchell, as long as union members want to aid the charities.

#### School Aid, Not Gifts Policy at Blaw-Knox

Blaw-Knox Co. has found a successful way to handle the business gift problem.

The funds which used to buy gifts for customers and others are diverted to scholarships.

The money finances the award of \$1,000 a year to four students for four years.

# 



 "TRAK-RAK" Crane moving into aisle between double rows of racks. Racks are 20 ft. high. Distance from floor to underside of roof truss is 30 ft. Aisle width is 5 ft.4 in.

Edgcomb Steel of New England, Inc. warehouses 3500 different items of steel, stainless steel, brass, and aluminum bar stock in an area 60 feet wide, 27 feet high, and 160 feet long.

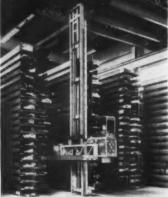
ONE man and a "Trak-Rak" Crane serve the five double rows and two single rows of "Christmas Tree" racks which hold 2700 storage trays. Edgcomb processes approximately 2500 to 3000 orders per month, and the company reports very favorable reductions in operating costs and faster order processing and delivery.

Edgcomb's "TRAK-RAK" Crane has a traveling bridge (Photo 1) which spans the storage bay, and an overhead trolley from which is suspended an electrically operated rotating column equipped with a carriage for handling the storage trays. All operations of the crane and carriage, which rotates, moves toward or away from the racks, and raises or lowers on the column, are controlled by the operator who rides with the carriage. Safety switches prevent the column from running into a rack and permit full rotation only when the unit is safely beyond the end of the racks.

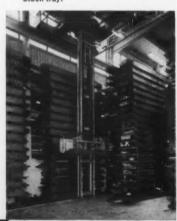
Hundreds of "TRAK-RAK" installations, designed to meet the user's particular requirements are in use today. They are handling many types of material and loads with great speed and economy. Specific advantages the "TRAK-RAK" System of vertical storage and handling brings to the user are:

- Maximum utilization of the cube to permit storing and handling more material in less floor area.
- 2. Faster material movement in and out of storage.
- 3. Reduction in personnel and lower labor costs.
- 4. Improved safety, better housekeeping, precise inventory control.

Take the first step toward faster, more efficient material storage and handling now. Write for complete details on "Trak-Rak." Chicago Tramrail Engineers are available to discuss your handling problem with you at any time—and at no obligation to you.



Crane with operator, who rides with carriage, emerging from aisle with loaded stock tray.



Picking up or depositing stock trays on the rack is a fast, safe operation. Trays and rack sections are color coded for quick location and identification.



CHICAGO TRAMRAIL CORPORATION

1312 SOUTH KOSTNER AVENUE . CHICAGO 23, ILLINO

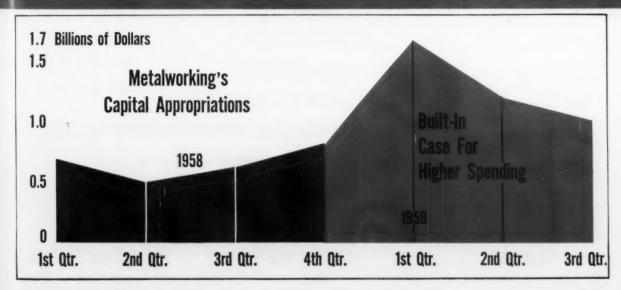
Specialists in the design, manufacture and installation of material handling systems for steel warehouses and other industries

Survey of Metalworking Capital Appropriations
Conducted for THE IRON AGE

By The National Industrial Conference Board Predicts:

# A MAJOR ADVANCE In Plant and Equipment Spending for 1960

# Why Capital Spending Will Go Up Next Year



# Steel Strike Effects Push More Capital Spending Into 1960

Spending for new plants and equipment will reach higher levels in 1960.

Metalworking capital appropriations for the first nine months are 115 pct above a year ago.

Spending plans, delayed by the steel strike, will mean more new orders in 1960.

Metalworking companies looked past the short-term impact of the steel strike and maintained a high rate of appropriations for capital spending throughout the third quarter.

As a result of the continued high rate, metalworking capital appropriations for the first nine months of 1959 are 115 pct above a year ago.

This foreshadows an important

increase in capital spending for new plants and equipment in 1960.

Steel Strike Hurt—Actual spending, which follows appropriations by an interval of from six to 12 months, was delayed by the deterring effects of the steel strike. But with these uncertainties removed and business headed into another major boom, the 115 pct advance over last year will be translated into plant and equipment spending in 1960.

These conclusions are drawn from the latest of a continuing survey of metalworking's quarterly capital appropriations. It is conducted quarterly for The IRON AGE by the National Industrial Conference Board.

Ahead of Last Year—A breakdown of major industry groups in metalworking shows capital appropriations in all segments running well ahead of the first three quarters of last year.

Here is the record of the first nine months of 1959 compared with 1958:

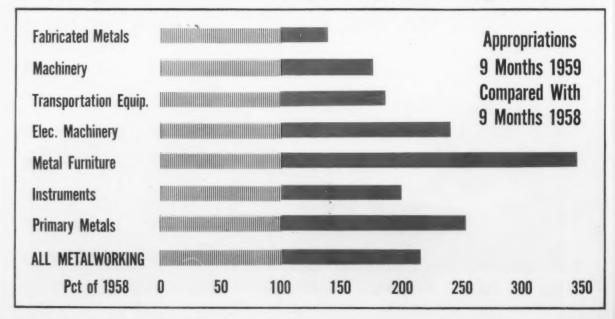
Fabricated metals are up 40 pct; machinery up 78 pct; transportation equipment up 88 pct; electrical machinery up 141 pct; instruments up 100 pct; primary metals up 153 pct; metal furniture up 247 pct.

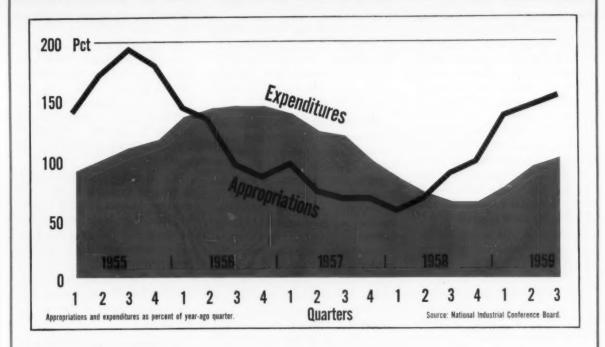
While continuing to lead the year-ago rates by a wide margin, third quarter appropriations were actually down slightly from the second quarter in dollar volume.

This apparently is a direct reflection of the steel strike effects. But the moderate decline shows that most company appropriations committees resisted short-term pressures to maintain a rapid rate of modernization and improvement.

Dollar Projections — Estimated (Turn to Page 140)

## All Major Industry Groups Top Year-Ago Levels





## How Appropriations Lead Actual Spending

The chart above shows how appropriations figures can predict actual spending for new plants and equipment anywhere from six months to a year before the orders are placed.

You'll notice appropriations reached the peak rate of advance in the third quarter of 1955. However, spending didn't peak until the third and fourth quarters of 1956, over a year later.

Similarly, appropriations hit bottom in the first quarter of 1958. But expenditures did not bottom out until the third and fourth quarters of the same year.

Called Upturn — More recently, appropriations bounded back in the fourth quarter of 1958 to what they were a year earlier. However, it wasn't until the third quarter of 1959 that the same also was true for spending.

This chart compares changes in appropriations and expenditures rather than actual dollar levels. In other words, the expenditure figure of 90 pct in first quarter 1955 means it was 10 pct below the same quarter in 1954.

The data for the chart was compiled from a survey of all manufacturing conducted by the National Industrial Conference Board for Newsweek magazine.

How to Use Data—However, it does show the same use to which companies selling to the metalworking industry can put this survey of metalworking's capital appropriations.

The IRON AGE survey of metalworking capital appropriations is designed to forecast future demand for capital goods in some 37 different metalworking industries.

For companies selling to metalworking, this capital appropriations survey provides a brand new marketing tool.

By reporting the spending plans (appropriations) of major industry groups classified by SIC codes, the survey can be used to locate the best prospects for future capital goods orders long before they are placed.

Also, since the metalworking capital appropriations data is broken down into major industry groups, management can use it to compare its capital spending programs with its own industry. Particularly helpful are the data on appropriations per worker.

New Record—The survey of metalworking capital appropriations may serve, too, as a general business indicator. Since the capital goods industry usually leads the rest of the economy, this survey can be used to gage the overall course of business in coming months.

This current survey is based on returns from 473 companies representing 1,180 metalworking plants with 500 or more production workers. This sets a new record for the survey.

#### (Continued from P. 138)

appropriations by all metalworking (as projected from actual survey reports) totaled \$1,025 million in the third quarter, when strike effects were most serious. This compares with \$1,201 million in the second quarter, indicating the moderate drop in the period.

The decline in the third quarter was most serious in the industries directly affected by the strike, primary metals. The steel industry was not alone in being strike-bound. The U. S. copper industry was also closed up by labor troubles.

Furthermore, the aluminum industry was operating on an interim contract with all wage increases or fringe benefits retroactive to Aug. 1. This is hardly a climate to consider future capital spending. Nevertheless, many nonferrous plants raised appropriations sights.

Steel Not Discouraged-In spite of being entirely shut down, the steel industry's appropriations were down only 15 pct from the third quarter of 1958. Statements by industry leaders since the resumption of operations under the Taft-Hartley injunction indicate they intend to go ahead with all major programs.

Furthermore, the forced halting of programs during the strike, plus the increased demand for steel, combine to create a new, accelerated demand for capital improvements in the steel industry.

The Big Gainer-Individual industries within metalworking continued to make major increases in capital appropriations in the third quarter. Star performer was the electrical machinery group. As a whole, this industry's appropriations topped third quarter 1958 by 315 pct.

Automotive manufacturers, the biggest group in actual dollar outlays, boosted their third quarter capital appropriations to 245 pct over the third quarter of 1958. This follows a spectacular jump of 352 pct in the second quarter of 1959 compared with the same quarter a year ago.

These tremendous gains reflect rising sales of 1960 models and the high confidence motor vehicle producers have in the future demand for their products.

Survey Scope—These are some

of the high points and conclusions drawn from the survey. But how are they arrived at?

In this third quarter survey, 473 companies responded. These companies reported for 702 individual SIC codes and 1,180 plants with 500 or more production workers.

This is a new survey record, indicating its growing acceptance as a valid indicator by companies sur-

The sampling base of companies eligible for inclusion in the survey employs almost 4,020,000 workers. Reporting establishments account for 66 pct of the total employees in companies with plants of 500 or more workers.

From these replies, total appropriations for the entire metalworking field as surveyed can be estimated.

Sensitive Indicator-This is the fifth report on the continuing survey conducted by The Conference Board under IRON AGE sponsorship. Through its specific industry analysis, the present survey pinpoints detailed appropriation trends in this important sector of manu-

(Turn to P. 143)

Bla Iro Pri Ro No M

THE I

## Detailed Look at Metalworking's Spending Plans

Major Metalwor	king	Grou	ps			Pct Change	Pct Change	Pct Change
		Capi	tal Appropri	ations—\$ M	3rd Qtr. 1959	2nd Qtr. 1959	1st 9 mos. 1959	
Industry	SIC	2nd Qtr. 1958	3rd Qtr. 1958	2nd Qtr. 1959	3rd Qtr. 1959	over 3rd Qtr. 1958	over 2nd Qtr. 1958	over 1st 9 mos. 1958
Metal Furniture	25 33 34	\$1.0	\$1.0	\$9.2	\$1.6	+55 Pct	+803 Pct	+247 Pct
Primary Metals	33	92.4	174.3	250.7	179.7	+3	+171	+153
Fabricated Metal Products	34	26.4	34.2	38.1	41.2	+21	+45	+40 +78
Machinery (exc. Electrical) Electrical Machinery and	35	67.9	66.3	119.3	125.6	+90	+76	+78
Equipment	36	39.4	29.1	91.9	120.6	+315	+133	+141
Transportation Equipment	37	72.3	66.4	236.0	167.1	+151	+226	+88
Instruments, etc	38	5.0	6.3	14.8	8.2	+30	+194	+100
Total Reported <sup>1</sup> Total Estimated for All		304.4	377.6	760.0	644.1	+71	+150	+110
Metalworking <sup>2</sup>		\$499	\$619	\$1,201	\$1,025	+66 Pct	+140 Pct	+115 Pct

Based upon returns from 473 companies reporting 702 separate industry groups.

1 Excludes erdnance and accessories, SIC code 19, and miscellaneous metal manufacturing, SIC code 39.

2 Estimated for universe described in table on p. 142. This includes metalworking companies with at least one plant of 800 production workers or more in 1857. Calculated by dividing reporting companies' appropriations in each period by the coverage ratios indicated on p. 142, and sum

Source: The National Industrial Confe

Fabricated			Capital /	Appropriat	tions—\$ A	Aillions			Pct Change 3rd Qtr.	Pet Change 2nd Qtr.	
Metal Product  Industry Co  Metal Cans 34 Cutlery, Tools, Hardware 34 Heating Apparatus (exc. elec.) and Plumbing Fixtures 34 Fabricated Struct. Prod. 34 Screw Products & Rivets 34 Stampings 34 Coating, Engraving; Misc. Fab. Wire Prod. 347, Miscellaneous Fabricated	ıcts		1	958			1959		1959	1959	
Industry	SIC Code	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	over 3rd Qtr. 1958	over 2nd Qtr. 1958	Appropria- tions per Worker <sup>1</sup>
Metal Cans	341	\$ 7.1	\$ 8.0	\$ 11.3	\$ 18.5	\$ 12.0	\$ 12.8	\$ 9.6	- 15 Pct	+ 59 Pct	\$1,187
Cutlery, Tools, Hardware.	342	0.7	0	1.3	3.7	3.1	2.5	10.6	+730	n. s.	573
Heating Apparatus (exc. elec.) and Plumbing											010
	343	3.8	1.9	1.8	3.0	3.5	2.8	3.1	+ 77	+ 53	619
Fabricated Struct. Prod	344	6.3	8.9	8.0	8.8	6.6	6.7	6.0	- 25	- 25	948
Screw Products & Rivets.	345	1.8	1.2	2.3	4.3	1.9	4.0	2.2	- 7	+244	806
Stampings	346	4.0	2.6	6.5	4.6	15.7	5.3	6.7	+ 2	+ 99	595
Coating, Engraving; Misc. Fab. Wire Prod	347, 348	2.2	-0.3	0.1	0.3	0.7	1.4	0.3	+167	n. c.	288
Miscellaneous Fabricated Metal Products	349	3.7	4.1	2.8	4.5	3.4	2.7	2.6	- 5	- 34	379
Total	34	\$ 29.5	\$ 26.4	\$ 34.2	\$ 47.7	\$ 47.0	\$ 38.1	\$ 41.2	+ 21 Pct	+ 45 Pct	\$ 715

In dollars per production worker based on appropriations made from fourth quarter 1958 through third quarter 1950.
 n. s.; Pet changes of 1000 pet are not shown. See dollar figures.
 n. c., Not calculated—appropriations rose from a net cancelled to a net positive amount.

Source: The National Industrial Conference Board.

Transportation	on		Capital A	ppropriat	Pct Change	Pct Change						
Equipment			19	58			1959		3rd Qtr. 1959	2nd Qtr. 1959		
Industry	SIC Code	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	over 3rd Qtr. 1958	over 2nd Qtr. 1958	tio	ropria- ns per orker <sup>1</sup>
Motor Vehicles & Equip.2	371, 375, 379	\$101.0	\$ 42.0	\$ 36.8	\$ 46.2	\$ 95.6	\$189.8	\$126.8	+245 Pct	+352 Pct	5	842
Aircraft & Parts	372	51.4	27.4	26.5	67.6	61.0	43.3	34.8	+ 31	+ 58		427
Ship & Boat Building	373	8.2	1.9	2.2	3.9	6.4	1.5	2.5	+ 11	- 19		467
Railroad Equipment	374	3.0	1.1	0.9	1.3	2.1	1.4	3.1	+235	+ 33		300
Total	37	\$163.6	\$ 72.3	\$ 66.4	\$119.0	\$165.1	\$236.0	\$167.1	+151 Pct	+226 Pct	\$	633

In dollars per production worker based on appropriations from the third quarter of 1958 through the third quarter of 1959.
 Includes motorcycles, bicycles and parts, not elsewhere classified, SIC codes 375 and 379.
 Source:

Source: The National Industrial Conference Board.

Primary Me	tal		Capital A	Appropria	tions—\$ f	Aillions			Pct Change	Pct Change	
Industries			19	158			1959		3rd Qtr. 1959 over	2nd Qtr. 1959 over	Appropria-
Industry	SIC Code	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	3rd Qtr. 1958	2nd Qtr. 1958	tions per Worker <sup>1</sup>
Blast Furnaces, Steel Wks. & Rolling Mills	331	\$ 62.7	\$ 72.1	\$136.3	\$105.4	\$464.2	\$182.3	\$116.4	- 15 Pct	+153 Pet	\$2,764
Iron & Steel Foundries	332	5.3	3.6	5.0	5.6	9.8	8.0	7.0	+ 41	+124	511
Primary Smelt. Non- ferrous <sup>2</sup>	333, 334	31.8	2.9	14.0	8.6	30.3	28.3	33.0	+136	+880	2,022
Rolling, Drawing, Extrud- ing Nonferrous	335	13.5	11.3	14.6	15.6	32.2	25.7	12.8	- 12	+127	1,087
Nonferrous Foundries	336	2.4	0.3	0.9	0.2	0.8	3.8	7.3	+894	n. s.	986
Misc. Primary Metals	339	1.8	2.2	3.4	3.4	3.4	2.5	3.2	- 5	+ 12	574
Total	33	\$117.6	\$ 92.4	\$174.3	\$138.8	\$540.7	\$250.7	\$179.7	+ 3 Pct	+171 Pct	\$2,068

In dollars per production worker based on appropriations made from fourth quarter 1956 through third quarter 1968.
 Includes secondary nonferrous smelters, SIC 334.
 n. s.: Pct changes of 1000 pct or greater are not shown. See dollar figures.

Source: The National Industrial Conference Board.

Electrical			Capital /	Appropriat	Pct Change	Pct Change					
Machinery	_		19	958			1959		3rd Qtr. 1959	2nd Qtr. 1959 over	Appropria-
Industry	SIC Code	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	3rd Qtr. 1958	2nd Qtr. 1958	tions per Worker <sup>1</sup>
Elec. Transmission Equip.	361	\$ 8.9	\$ 5.6	\$ 3.4	\$ 17.4	\$ 8.1	\$ 11.0	\$ 56.1	n. s.	+ 95 Pct	\$1,953
Electrical Ind. Apparatus	362	8.7	6.6	3.5	12.4	9.0	25.7	7.7	+121	+290	874
Household Appliances	363	7.4	3.5	5.4	3.6	8.7	10.6	6.1	+ 13	+204	630
Electric Lighting & Wiring Equipment	364	2.3	1.4	1.0	5.3	2.8	5.4	3.1	+218	+276	557
Radio & TV Receivers	365	1.1	1.3	0.9	1.9	1.4	3.8	6.2	+561	+191	471
Communication Equipment	366	8.5	9.3	4.1	6.3	10.0	10.1	28.2	+590	+ 9	1,060
Electronic Components	367	7.7	10.9	10.2	22.5	21.2	22.9	12.0	+ 17	+110	1,268
Misc. Electrical Equipment	369	1.0	0.7	0.6	1.0	1.3	2.4	1.3	+117	+235	735
Total	36	\$ 45.5	\$ 39.4	\$ 29.1	\$ 70.4	\$ 62.5	\$ 91.9	\$120.6	+315 Pct	+133 Pct	\$1,028

<sup>&</sup>lt;sup>1</sup> In dollars per production worker based on appropriations made from the fourth quarter of 1958 through the third quarter of 1959, n. e. Pct changes of 1000 pct or more are not shown. See dollar figures.
Source: The No. Source: The National Industrial Conference Board.

Nonelectrica	1		Capital A	Appropriat	ions—\$ f	Millions			Pct Change	Pct Change	
Machinery			19	958			1959		3rd Qtr. 1959	2nd Qtr. 1959	Accession
Industry	SIC Code	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	3rd Qtr. 1958	2nd Qtr. 1958	Appropria- tions per Worker <sup>1</sup>
Engines & Turbines	351	\$ 5.9	\$ 3.3	\$ 3.3	\$ 8.2	\$ 22.9	\$ 6.9	\$ 5.8	+ 74 Pct	+111 Pct	\$ 787
Farm Machinery & Tractors	352	5.2	9.5	18.7	13.4	18.9	14.2	11.8	- 37	+ 49	1,718
Construction, Mining.	332	3.2	9.0	10.7	13.4	10.3	14.2	11.0	- 31	T 49	1,710
Handling Equipment	353	26.7	5.4	5.6	58.2	34.0	27.9	11.7	+109	+415	1,655
Metalworking Machinery									,		
& Equipment <sup>2</sup>	354, 359	6.5	3.8	3.2	5.8	9.0	6.7	11.0	+248	+ 76	495
Special Ind. Machinery	355	13.3	15.2	7.4	9.2	28.4	18.3	8.5	+ 14	+ 20	2,818
General Ind. Machinery											
& Equipment	356	15.9	6.3	6.8	10.2	24.7	16.1	37.3	+446	+155	1,531
Office & Store Machines	357	18.4	19.3	19.4	31.4	19.4	26.0	34.8	+ 79	+ 35	2,181
Service Industry Machines	358	1.4	5.1	1.9	2.0	2.3	3.1	4.8	+159	- 39	609
Total	35	\$ 93.4	\$ 67.9	\$ 66.3	\$138.2	\$159.6	\$119.3	\$125.6	+ 90 Pct	+ 76 Pct	\$1,404

 $<sup>^1</sup>$  in dollars per preduction worker based on appropriations from fourth quarter 1958 through third quarter 1959.  $^2$  includes miscellaneous machinery, SIC code 356.

Source:	The B	Lationa	Indicat	rial Co.	aferone	Board

Instruments				Car	ital A	ppr	opriat	ion	\$ N	/illi	ions				Pct Change	Pct Change		
				1958						1959					3rd Qtr. 1959	2nd Qtr. 1959		
	SIC Code		1st Qtr.		2nd Qtr.		ard Qtr.		4th Qtr.		1st Qtr.		2nd Qtr.	ard Qtr.	3rd Qtr. 1958	2nd Qtr. 1958	Appropria- tions per Worker <sup>1</sup>	
Laboratory, Scientific & Engineering Instruments	381	\$	2.1	\$	0.9	\$	0.8	\$	2.2	\$	5.3	\$	4.7	\$ 2.5	+214 Pet	+400 Pct	\$	931
Measuring & Controlling Instruments	382 383, 384,		3.8		2.3		4.3		4.0		6.2		7.8	3.6	- 18	+233		825
	385, 386, 387		2.1		1.7		1.2		2.9		3.9		2.3	2.1	+ 82	+ 31		555
Total	38	\$	7.9	\$	5.0	5	6.3	\$	9.2	\$	15.4	\$	14.8	\$ 8.2	+ 30 Pct	+194 Pet	\$	764

acti not thei twe plac a st liab be p

(Co

ŀ mos refle And

S sign as a stee C port it ca

clim beer

mer

A shov in t worl strik flow

SI

prod prov quai tors curr a na tors

do a supp M capi year

face face Settl reac

of u E nect

grov were sub-

THE

In deliars per production worker based on appropriations from fourth quarter 1958 through third quarter 1959.
 Includes optical instruments, surgical instruments, ophthalmic goods, photographic equipment and watch, clocks, clock-operated devices, SIC codes 383, 384, 385, 386
 Source: The National Industrial Conference Board.

(Continued from P. 140)

facturing.

Historically, metalworking is the most sensitive area of business in reflecting capital spending trends. And appropriations mean money actually earmarked for spending, not mere intent. As pointed out, there is a significant lead time between appropriations and actual placing of orders. This means that a survey of appropriations is a reliable indicator of orders that will be placed for new plants and equipment in the months ahead.

Strike Effects—Possibly the most significant result of the survey is as a measure of the effects of the steel strike on capital spending.

Obviously, it did have an important effect. As a single factor, it can be blamed for "denting" the climb in capital spending that has been steady since mid-1958.

A glance at individual tables shows that authorizations dropped in the third quarter in the metalworking fields that either were on strike or dependent on a continuous flow of steel.

Slower Spending — Basic steel producers cut their capital approvals 15 pct below the third quarter volume in 1958. Fabricators repeated the 25 pct cut that occurred in the second quarter. With a narrow margin of profit, fabricators could hardly be expected to do anything but retrench when their supplies were cut off.

Metal canmakers also cut their capital authorizations below the year-ago level. This industry, while faced with a steel shortage, also faced an uncertain labor future. Settlement with the union was reached only last week after months of uncertainty.

Effects Diminish—But, as connection with the steel industry grows less direct, capital cutbacks were fewer. In many metalworking sub-groups, approvals were increased at a more rapid rate.

Most significant: Metalworking machinery, general industrial machinery, electrical transmission equipment, radio and TV, communications equipment, and railroad equipment.

Following is a brief rundown of other significant developments disclosed in the survey:

Primary Metals—The decline in primary metals in year-ago comparisons was almost offset by a rise in the nonferrous smelting industry. Even iron and steel foundries ran counter to the decline in basic steel. However, none of the primary metals categories matched the percentage gains scored in the second quarter of this year.

In fact, the period shows a continuation of the decline in authorizations since the large hike in the first quarter. It will remain for the strike reaction to be complete before new trends can be really sensed.

Nonelectrical Machinery — This category increased its authorizations at a faster rate in each of the past five quarters. The only downturn in the third quarter was in farm equipment.

This group had shown some spectacular gains in 1958 when it went counter to the downtrend. But now, with declines in farm income predicted, some retrenching was indicated to equipment makers.

Of the eight divisions, five made new approvals in the third quarter at a pace greater than the first nine months of the year. These are construction equipment, metalworking equipment, general industrial machinery, office and store machinery, and service industry machinery.

Electrical Machinery—All eight divisions of this industry approved



CONFIDENCE: Continued high capital appropriations reflects auto makers' confidence in new models. Chrysler photo.

### Survey Coverage Hits New Record

All companies in the industries listed below, with plants of 500 or more plant workers, were queried. They account for about two-thirds of the total employment and buying power in the metalworking industry. The last column shows the percentage of production workers employed by the companies cooperating in this survey.

Industry	SIC Code	Production Workers, Thousands	Production Workers, Thousands	Pct of Total Employment Cooperating Companies	
		Companies With Plants of 500 or more	Cooperating Companies		
Metal Furniture	251, 252, 253, 254, 259	31	12	38 Pct	
Blast Furnaces, Steel Works,					
Rolling Mills	331 332	596 81	314 60	53 73	
Primary & Secondary Smelt-	332	61	00	13	
ing, Nonferrous	333, 334	54	50	92	
Rolling, Drawing, Extruding,					
Nonferrous Metals	335 336	115	79	69	
Nonferrous Foundries	339	37	12 22	66 59	
Metal Cans	341	47	45	94	
Metal Cans	342	54	35	64	
Heating Apparatus (except					
elec.) & Plumbing Fixtures	343	33	20	61	
Fabricated Structural Products Screw Products & Rivets	344 345	60 26	30 15	49 60	
Stampings	346	76	54	72	
Coating, Engraving; Miscel- laneous Fabricated Wire			-		
laneous Fabricated Wire					
Products	347, 348	21	10	47	
Mis. Fabricated Metal Products Engines & Turbines	349 351	55 73	35 56	65 76	
Farm Machinery & Tractors	352	60	34	56	
Farm Machinery & Tractors Construction, Mining Handling				30	
Equipment	353	118	80	67	
Metalworking Machinery &	354, 359	107	00	00	
Equipment	355	48	66 23	62 47	
General Industrial Machinery	300	10	-	40	
& Equipment	356	88	58	65	
Office & Store Machines	357	76	51	67	
Service Industry Machines	358 361	39	20	52	
Electrical Transmission Equip. Elec. Industrial Apparatus	362	133	47 63	53 47	
Household Appliances	363	97	46	48	
Electric Lighting & Wiring					
Equipment	364	55	30	54	
Radio & TV Receivers Communication Equipment	365 366	72 113	28 52	40 46	
Electronic Components	367	95	62	65	
Misc. Electrical Equipment	369	27	8	30	
Motor Vehicles & Equipment	371, 375.	638	544	85	
Alessaft & Donto	379	500	404	00	
Aircraft & Parts Ship & Boat Building.	372 373	522 61	484	93 50	
Railroad Equipment	374	43	26	61	
Laboratory, Scientific &					
Engineering Instruments	381	41	16	39	
Measuring & Controlling	200	41	0.0	0.4	
Instruments	382 383, 384,	41 78	26 20	64 26	
omor	385, 386, 387	10	20	20	
Total		4,020	2,662	66 Pc	

Based upon returns from 473 companies reporting 702 individual industry codes. Employment figures based on Iron Age Census data, 1957. Figures in last column calculated from unrounded data. A total of 1,180 plants with 500 or more workers reported. This is a new record for companies, plants and SIC codes reported. SOURCE: The National Industrial Conference Board.

more in the third quarter than a year ago. Third quarter volume jumped 315 pct over the 1958 period. This was on top of a 133 pct year-to-year gain in the second quarter.

Three categories; electrical transmission equipment, radio and TV, and communication equipment, were in the select group that appropriated more in the third quarter than in the second. Every division appropriated more in the first three quarters than in the period a year ago.

Transportation Equipment — As pointed out previously, the 245 pct gain in motor vehicles over the third quarter of 1958 was on top of a 352 pct second quarter year-to-year gain.

In addition to the gains in the motor vehicle group, the railroad equipment industry also reported a large gain of 235 pct between third quarters of 1958 and 1959. This sharp increase is in line with the rising trend of capital outlays in the railroad industry, which shows signs of continuing well into 1960.

Instruments Slow Up — Instrument makers as a whole increased capital appropriations in the third quarter by 30 pct over the same period a year ago.

But this is a much lower advance than the 194 pct reported in the second quarter of this year. Primarily responsible was the 18 pct cutback reported by makers of measuring and controlling instruments.

The manufacturers of professional instruments and timing devices, however, raised their approval rate from 31 pct in the second quarter of this year to 82 pct in the third.

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

## Choice New Plant Sites Now Available

along the New, bigger Norfolk and Western



With the historic merger of the Virginian Railway into the Norfolk and Western—recently approved by the Interstate Commerce Commission—a number of choice new plant sites on the expanded N&W are now available to industry.

These fine sites offer abundant, reasonably priced electric power and an ample water supply. Sites are from 100 acres up of sufficiently level ground to permit economical development and expansion of plants and facilities. All locations are within easy reach of utilities, the railroad and highways.

Plants locating on the new sites along the bigger Norfolk and Western are within short hauls of a great variety of natural resources, including vast quantities of high-quality, all-purpose Bituminous Coal and high-purity limestone. Nearby, too, are the rich, teeming markets of the Southeast, Midwest, and North, and the markets of the world through the ice-free Port of Norfolk on famed Hampton Roads.

Manpower in this region is home-rooted and hard-working, with traditionally high productivity, low absenteeism and low turn-over. People, businesses, and local and state governments in this productive area are friendly to new industry; climate is moderate; taxes are fair. And its an exceptionally good place to work and live.

Send us your requirements, in confidence; then let our specialists show you just what this bountifully endowed, strategically

located territory has to offer.

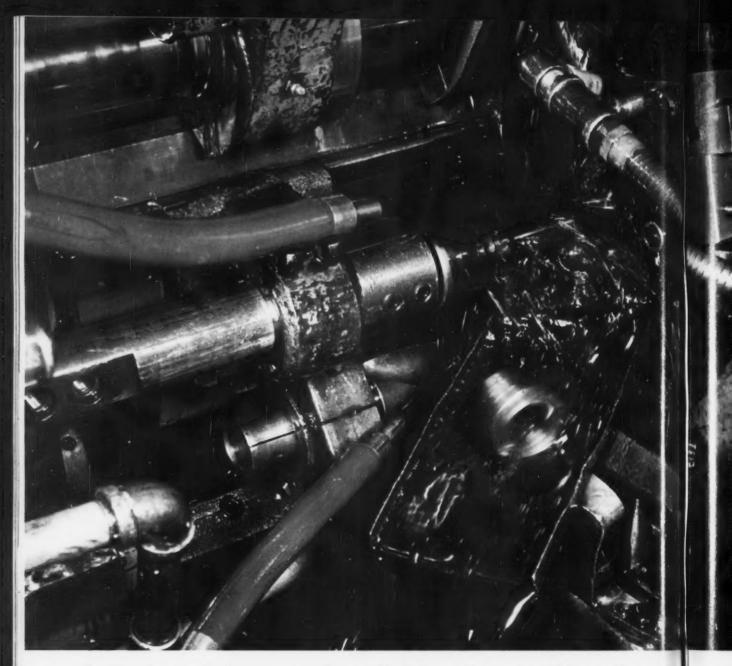


Phone, Wire, Write:

H. P. Cotton Assistant Vice President — Industrial Development Division IA-865 (Phone Diamond 4-1451, Ext. 474) Norfolk and Western Railway Roanoke, Virginia

THE NEW

Norpolkand Western



Gets closer tolerances, finer finishes, trims cutting oil cost

# **GULF MAKES THINGS**

"We've reduced our average annual cutting oil bill 50%—and still hold closer tolerances and get finer finishes on a wide variety of precision machining jobs. We achieved this by using one cutting oil—Gulfcut 41C—which doubles as a lubricant for the working parts in our screw machines—and by using a special filtering system recommended by Gulf engineers."

So reports John R. Scott, Jr., General Foreman in the Production Department of Nippert Electric Products Company, Columbus, Ohio. Their screw machine department turns out precision-made steel cores, vee rings and lock nuts for the Nippert custom commutators and slip rings serving a wide range of industries.

Nippert operates four Acme-Gridley six-spindle automatics, a five-spindle Warner & Swasey, and a single spindle No. 4 Brown & Sharpe for machining these parts. Among the materials machined are Ledloy, leaded C-1116, leaded C-1117 and leaded C-1036. Regular brass is also used for supersonic missile parts.

"Reliable operation at higher temperatures, higher speeds, greater altitudes—these are the demands made on our Nippert commutators," says Mr. Scott. "This in turn means tighter specifications for the machined parts—closer tolerances, finer finishes—and we're getting them with Gulfcut 41C. We also have the added economy of using this same oil to lubricate the machines."

Wi

filter cord "V have

can your copy with

nant





John R. Scott, Jr., General Foreman of the Production Department, with samples of various sizes of Nippert custom commutators.

NEW 100-page manual tells all about selection and usage of cutting oils. Send for your complimentary copy of "Metal Machining with Cutting Fluids."



This Acme-Gridley six-spindle automatic in the Screw Machine Department of Nippert Electric Products Company is cutting a commutator core from leaded C-1036 steel. Gulfcut 41C serves as both cutting oil and machine lubricant.

with Gulfcut<sup>®</sup>...

to-

gle

ese

ded

ass

her

ade

in

arts

ing

my

## **RUN BETTER!**

In view of this dual use of Gulfcut 41C, Gulf recommended a magnetic filter coupled with a porous bronze filter. This system screens out solids to one micron, according to Otis E. Jeffries, Screw Machine Foreman.

"With this filtering system," says Mr. Jeffries, "we have lengthened cutting oil life, reduced oil-change downtime, and eliminated the risk of abrasive contaminants where Gulfcut is used as the lubricating oil."

Whatever type of machining you do, the Gulfcut line can meet your needs. Just call a Gulf Sales Engineer at your nearest Gulf office, or write for complimentary copy of Gulf's new 100-page manual, "Metal Machining with Cutting Fluids."

#### **GULF OIL CORPORATION**

Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

- ☐ Send literature on Gulfcut oils.
- Send copy of 100-page manual, "Metal Machining with Cutting Fluids."



# Change in nut saves \$11,000



RB&W survey shows business machine maker how simple change in fastener dimensions will add to profits the equivalent of \$110,000 in extra sales

A simple change in nut size offered one typewriter manufacturer an \$11,000 a year saving. Yet it involved no re-engineering . . . no compromise with quality.

The RB&W Fastener Man was invited to make a survey of the manufacturer's fastener usage. In studies of blueprints and specifications, he found only one minor area for improvement—but what an improvement! The drawings still showed a hex nut taken from specifications long obsolete as a standard. By simply switching to the current

standard size, the manufacturer could save \$11,000. That's pure profit. Even if his net-on-sales were as high as 10 per cent. It would take extra typewriter sales of \$110,000 to net the same amount.

Are you sure you're not wasting needless dollars on fastener specifications? Why not ask for an RB&W man to make a survey of your fastening operations. He's no smarter than your engineers, but he knows what to look for. Write Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.



Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Folls, Ill., Los Angeles, Calif. Additional sales offices at: Ardmare (Phila.), Pa.; Pittsburgh; Detroit; Chicogo; Dallas; San Francisco. Sales agents at: Cleveland, Milwaukee; New Orleans; Denver, Forge, Distributors from coast to coast,

## Automakers Like Plastics, But-

#### New Production Methods Needed to Promote Greater Use

Automakers would like to use more plastic parts because of the weight-saving advantages.

But new methods of making large parts are needed before use will increase sharply.—By A. E. Fleming.

■ The use of plastics by the automobile industry will increase in the coming year, but it won't be spectacular. It will be a continuance of the slow-but-steady progress made in the last decade or so.

However, there is a common belief that the popularity of plastics will improve more rapidly if steel prices keep climbing.

Plastic producers indicate they are ready and waiting for a flurry of automotive orders. However, car makers point out that plastic manufacturers have a lot of work to do before their product makes any giant strides. For one thing, they must develop automation machinery that can turn out large plastic parts at mass production rates.

Interest Is High—Auto makers are interested in plastics. The weight-reducing possibilities of the material are enormous. As a result, research teams of the auto firms are spending significant amounts of time, money and manpower trying to uncover new ways to use plastic in cars.

They are experimenting with such large plastic components as instrument panels, complete inner door panels, bucket-type seats and floor panels. Plastic-impregnated paper containing 40 pct resin will make up the bucket seats on some forthcoming experimental automobiles. But it doesn't look like any

of these king-size components will be installed on regular production American cars.

"What is needed," says Montgomery Ferar of the industrial design firm of Sundberg-Ferar, "is a fully-automated machine process in which plastic material can be converted by an extruder into sheets and moved down a line in one operation. The sheet would be formed into a trunk lid, for example, complete with hinge. It would be a unitized part that needs no further finishing."

Progress Is Slow—Because of the absence of such machinery, plastic progress has been slow. Use in cars

has risen from ounces to pounds in the past few years. But a vast untapped potential still exists. Present plastic parts are small—dial faces on instrument panels, heating housings and such.

"The plastics industry must shoulder the task of developing automation methods that will permit the handling of large components so that higher costs of plastic materials can be more than offset by labor savings," Mr. Ferar points out.

As an industrial designer, Mr. Ferar agrees that a public prejudice against plastics exists because of past misapplications of the mate-

#### Plated Parts Resist Corrosion



HEAVILY SALTED: Front bumper from a 1960 Pontiac, covered with film and salt from a harsh 18-hour spray, shows no signs of rust or pitting.

rial. Plastics companies say this shouldn't be so.

Big Shots—They are right, according to at least one car maker. The plastics laboratory of American Motors made a study of the ways in which plastics can be substituted for metal on cars, while providing functional improvement and money savings. Being as conservative as possible, AM found that the plastic parts that can be used comes to over 100 lb per car.

As one of the nation's major plastic users, AM has quadrupled its production of automotive plastic parts in the past four years. There are some volume jobs coming up.

The corporation believes it is in a good position to capitalize on future plastic applications. It operates injection molding machines ranging in size from very small to those capable of producing 12 lb shots. The capacity of AM's machines is rated at over 2000 ounces.

Look at Imports — In recent months, Detroit has taken a keen interest in the wide variety of plastic parts on European cars. These in-

clude instrument panels, garnish moldings, door and window handles, duct and heater parts.

According to W. P. Gobeille, manager of AM's Plastics Div., "If Rambler used plastic for the parts Volkswagen does, we'd have more than 40 lb of plastic on each of our models."

Mr. Gobeille says the use of tougher, more impact-resistant plastics can help trigger an increase in plastic applications. "We welcome such materials and stand ready to spend the research time and money to develop them." He points out that AM recently tested a new high-physical plastic in a mold that produced an 8 lb inner panel for a refrigerator door. If this can be done, it isn't impractical to think that a part such as an auto trunk deck lid might also be produced.

Frequent Change Hurts — Mr. Gobeille has a few suggestions to make to plastic mold makers, however. He takes an especially dim view of those who have hailed annual automotive design changes for creating more new mold business.

"We don't think drastic design changes every year have helped mold makers," he claims. "The tool bill gets so big that auto makers turn to other methods. We recently dropped several traditional and conventional plastic applications because of this."

The way to promote the use of plastics is by making better molds, more intricately designed and with more craftsmanship, says Mr. Gobeille. As an example of this belief, he points to the front seat side shield on Fords. "Here's a part requiring complex, precision molds. But the mold yields a functionally better, lower cost part."

Mr. Gobeille says AM is currently testing an automotive component that is now made out of steel on all cars. If it were adapted by all car makers, it would increase the amount of plastic used by the industry by 40 million lb a year.

#### More Go, Less Gas

Today's "big cars" are delivering more fuel economy than their counterparts of 20 years ago, according to P. C. Ackerman, Chrysler Corp. engineering vice president.

As examples of the improvements, he cites modern overhead valve engines, improved carburetion, higher compression ratios and the application of aerodynamic principles to the design of automobile bodies.

Other Improvements—Mr. Ackerman says the auto industry is working in a number of ways to improve existing components, to add new ones and to find better ways to turn more of the energy in each gallon of gasoline into useful driving thrust at the wheels. He says other gains in economy will come through further reductions in car weight.

"I believe there will be more widespread use of unit construction which requires no separate frame. And I foresee a much stronger trend toward the use of light alloys in engines, drive train and chassis components," he says.

#### The Bull of the Woods



# IT'S LIGHTER THAN YOU THINK!





...RIGID, RATTLE FREE and EASY TO ASSEMBLE WHEN DIE CAST with



ZAMAK

Light-weight, ZINC die cast instrument housings are finding extensive use in 1960's precision-engineered automobiles. Designed for the new MERCURY, this is an excellent example of the way automotive engineers are getting the most value—at low cost—from a single, rigid, rattle free and easy-to-assemble unit.

Integrated designing of panels and instrument clusters for ZINC die casting eliminates the cost of sub-assemblies and extra parts, unitizes instrumentation, provides space-saving facilities for wiring and saves weight. In this one complex, thin-wall,

ready-to-use ZINC die casting are integrally cast bosses and studs for rapid assembly, framing members and supports for finish pieces.

Here, as in many other applications, rugged but extremely thin-wall sections—possible only with ZINC die castings—minimize weight and are stronger in proportion to thickness than heavier sections. Weighing only  $7\frac{1}{2}$  pounds, the over-all measurements of this MERCURY instrument cluster are  $22\frac{1}{2}$ " long, 12" high and  $6\frac{1}{2}$ " deep, with a minimum wall thickness of .037".

HORSE HEAD® SPECIAL ZINC AND HORSE HEAD ZAMAK ARE PRODUCED BY

## THE NEW JERSEY ZINC COMPANY

DEVELOPERS OF THE ONLY STANDARD ZINC DIE CASTING ALLOYS IN USE TODAY

160 Front Street • New York 38, N. Y.



d

ld

ys

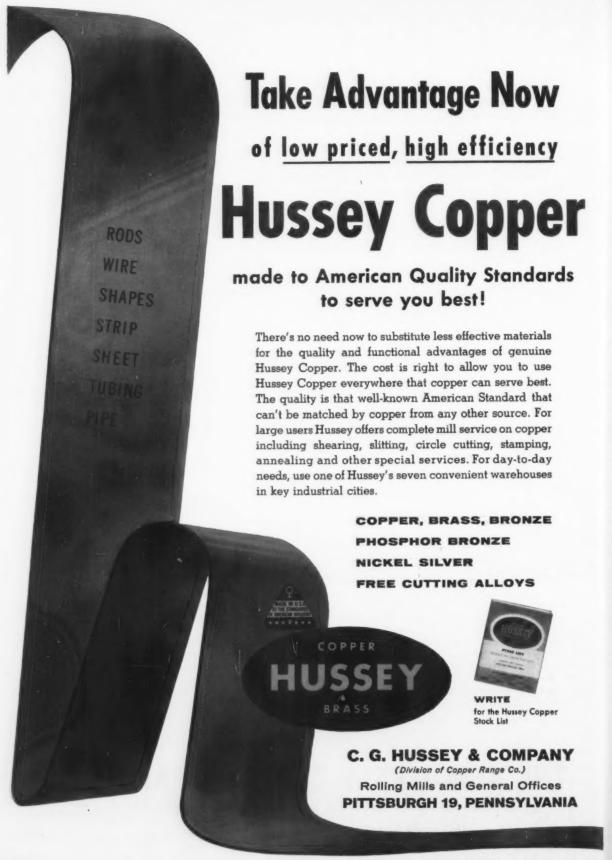
ne ar

re

er

ys sis

59



AF

mer

arbi

pan

tary

Mit

heer

men

by a

pani agai

ticia

up-h

1960

prod

# Why Mitchell Wants Settlement

#### He'll Use Full Power of Office to End the Strike

Labor Secretary Mitchell is going all out to bring about a steel strike settlement.

With an election year coming up, he knows voters may turn to another camp as things get worse.—By G. H. Baker.

• The Administration's call for third-party pressure on the steel negotiators is sweet music to the AFL-CIO United Steelworkers.

The union has been angling for months to force either (1) recommendations for settlement or (2) arbitration upon the steel companies. Now, with the aid of Secretary of Labor James P. Mitchell, the Union has made a long stride forward toward this goal. Mr. Mitchell now speaks openly of imposing outside pressure on what has been up to now two party (management and union) bargaining.

Softening Pressure — Some observers say Mr. Mitchell doesn't really intend to force the steel companies into settlement on terms set by an outsider. This theory suggests that all he wants to accomplish by such a threat is to pressure the companies into softening their holy war against the twin devils of inflation and featherbedding.

But a likelier estimate is that Mr. Mitchell means business. He is, after all, essentially a national politician and a loyal member of the Eisenhower team. He is well aware that his Republican party faces an up-hill fight with the voters in 1960.

Full Power—Result: He is anxious to use full powers of his office as Secretary of Labor to get steel production and steel fabrication

continuing without interruption, and to stop erosion of payrolls and consumer purchasing power. It is obvious that voters with empty pockets tend to view political office-holders with disfavor. They tend to vote for the "outs" on the simple theory that new faces may improve their fortunes.

The White House, acutely aware of this danger, now wants to settle the steel dispute at almost any cost. Principle is to be sacrificed, which is never a difficult task in this city. The Kaiser settlement now looks like a "model settlement" to many officials in the White House and in the Labor Dept.

The Menu-Here are the bar-

gaining choices raised by Mr. Mitchell.

- 1. They can let a so-called "public" panel recommend settlement terms. (Unions would accept; companies refuse.)
- 2. They can ask Federal Mediation Director Joseph F. Finnegan to recommend settlement terms. (Unions would accept, companies refuse.)
- 3. They can agree to accept the decision of an arbitrator on the disputed issues. (Unions would accept; companies refuse.)

The fact that the companies are still right, in the eyes of many Washington officials doesn't seem to help them.

## Judges Explain T-H Decision

• What was behind the U. S. Supreme Court's reasoning when it agreed to a reopening of the nation's steel mills?

The Court in November agreed with the U. S. Justice Department and the steel industry that the mills should be reopened for 80 days, as required by the Taft-Hartley Law.

The Reasons Why — But the Court did not fully explain its reasoning. Last week, Justices Frankfurter and Harlan spoke up and explained just why the Court believed it essential to send the strikers back to work:

"A district court is not to indulge its own judgment regarding the wisdom of the relief (the 80-day Taft-Hartley injunction) Congress has designed," the two jurists declared.

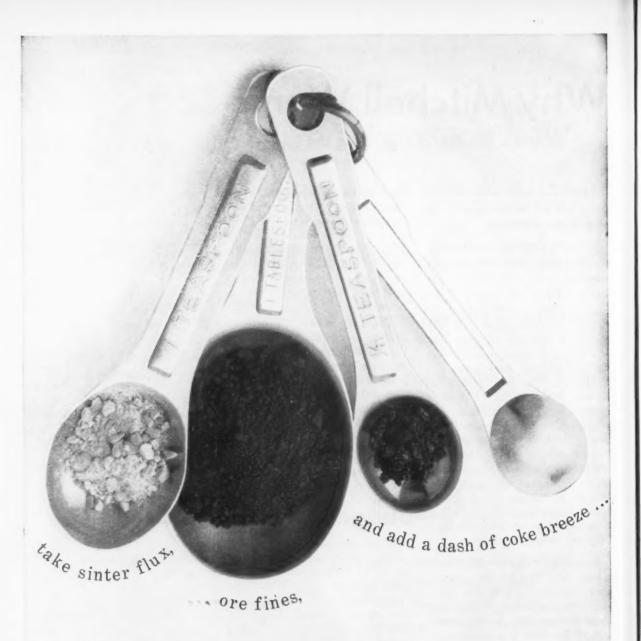
Emergency Existed-"The stat-

ute embodies a legislative determination that the particular relief decribed is appropriate to the emergency, when one is found to exist," they continued.

"It is not for the judiciary to negative the direction of Congress because of its own confident prophecy that the 80-day injunction and the administrative procedures which follow upon it will not induce a voluntary settlement of the dispute, or are too drastic a way of dealing with it," the justices explained.

No Scheming—The union had contended that it was necessary only to reopen a small fraction of steelmaking capacity. But on this point the Court said:

"A court is not qualified to devise schemes for the conduct of an industry so as to assure securing of necessary defense materials."



That's exactly what Inland's technical chefs will do when its giant, new sintering plant is completed in June. A single day's mix—4300 tons of iron ore particles, 500 tons of crushed limestone, 250 tons of fine coke—will bake a cake of clinkers which can be fed directly into blast furnaces. Result—better, faster reduction of raw iron ore to pig iron, blast furnace production upped 10%—more and more Inland steel to feed the hungry production lines of fast-expanding Mid-America manufacturing!

Building Today with an Eye to Tomorrow



#### INLAND STEEL COMPANY

30 West Monroe Street • Chicago 3, Illinois
Sales Offices: Chicago • Devenport • Detroit • Houston • Indianapolis
Kansas City • Milwaukee • New York • St. Louis • St. Pawl

Other Members of the Inland Family
JOSEPH T. RYERSON & SON, INC.
INLAND STEEL PRODUCTS COMPANY
INLAND STEEL CONTAINER COMPANY
INLAND LIME & STONE COMPANY

\*\*Division\*\*

tin

big

\$1 is s dus

pro all eve

alo tic

me

tar;

Va is inc ers

ity

SOL

you

cra

hai

vid

TH

## **Farwest Wants More Plastics**

### Sales There Are Already \$1 Billion a Year

Demand for plastics will continue growing in the Farwest as the area expands.

Aircraft, missile, and electronic makers are among the big users.—By R. R. Kay.

• Plastics in the Farwest is now a \$1 billion industry. Its future there is set. For years to come, the industry's growth rate should top the national average.

Farwestern population growth and industrial expansion should provide a solid, growing market for all products. But for plastics, it's even more so.

Explosive population growth, alone, spells heavy demand for plastic consumer products.

Major Users—Too, major segments of the region's economy are already big plastics users. These are the makers of civilian and military aircraft, missiles, and electronics.

The 2000 plastics firms in business there employ 100,000 persons. Value of the products they make is \$1 billion per year. Companies include extruders, fabricators, formers, molders, processors, and suppliers.

Big Answers—Hub of the activity — 1200 plastics companies — is southern California. That's where you find the concentration of aircraft-missile-electronic-making.

These industries are searching hard for new materials to answer space-age problems. Heat resistance is one. And plastics are providing some important answers.

Suppliers of raw materials, ma-

chinery, and equipment are sure to find business good for many, many years.

#### **Doubts About B-70**

What's behind the Air Force's decision to slow down the B-70 supersonic bomber program?

The official word is to save money now. But some high ranking persons in the aircraft industry on the Coast wonder whether the plane will ever get into production at all. Pentagon thinking and planning is on the big switch from manned aircraft to missiles.

The stretchout on the 2000-mphbomber affects many West Coastbased companies. North American Aviation, the prime contractor, will lay off 2000 persons.

Lockheed and Boeing are also hit. For Boeing, it's a \$200 million setback.

As the project stands now, the prototype won't fly until 1963—a year behind schedule.

#### Iron Ore Find

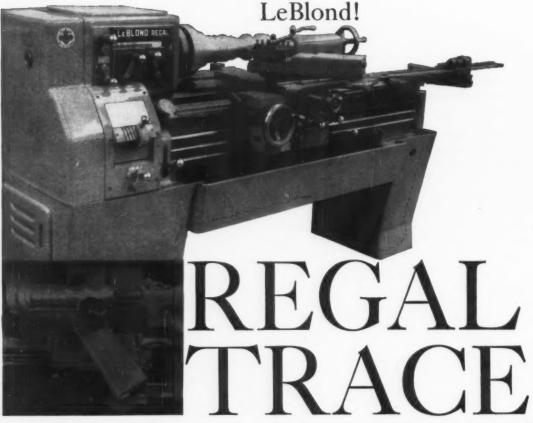
Southern Pacific Railroad says it has struck iron ore. A company mineral resource study in Nevada turned up this find: An assured reserve of 46 million tons of ore averaging 29.2 pct iron plus 86 million tons of partly proved ore.

#### Ground-Level Check for Aerial Skydart



**EXPENDABLE TARGET:** The Skydart, a rocket-powered target, is now in production at Santa Barbara Div. of Curtiss-Wright Corp.

## new tracer from



new principle, new design, new convenience, new price... as low as \$2760!

Now, simply by adding Regal-Trace, you get all the advantages of tracer lathe production with your present LeBlond Regal and Dual Drive Lathes. Easy, fast, accurate-Regal-Trace gives your lathe low cost duplication of parts for high production turning. Prices begin as low as \$2760 for the 13" Regal model.

Easy to use-Operates from easily prepared flat templates. Traces radii, stepped shafts, contoured faces, tapers, compound and spherical curves. Simple to set up. Can be installed in less than 15 minutes. Self-contained—only 4 major parts, all mounted on lathe. Hydraulic unit becomes

terfere with normal lathe operation). Tracer unit quickly replaces compound rest. Fast and accurate-Locked-circuit hy-

an integral part of the machine (does not in-

draulic system produces exceptional responsiveness and precision. Regal-Trace will consistently duplicate part after part to accuracy of ± .0005". Feed rate of 75" per minute keeps up with speediest cuts. Fits any LeBlond Regal built since 1955, and all Dual Drives. Regal-Trace is the ideal lathe attachment for tool room or production turning. See your LeBlond Distributor or write today for complete information. Ask for Regal-Trace Bulletin.

... cut with confidence

The R. K. LeBlond Machine Tool Company Cincinnati 8, Ohio

world's largest builder of a complete line of lathes for more than 72 years



THE IRON AGE, December 17, 1959

ernn usua posi

deve tool then

> . Fe dusti

exist used alon macl Olse Equi Dep ices

H men The M

The of n rebu that tools their H

able disp T C. ]

mere visit gatio sugg of s

M farm need U. : the

> tool THE

# Solution for Surplus Tool Problem

### A New Idea: Send Them to Underdeveloped Nations

Plans for disposal of the government's surplus machine tools usually meet with industry opposition.

Why not send them to underdeveloped countries that need tools but can't afford to buy them?—By R. H. Eshelman.

• For years, the machine tool industry has been haunted by the existence of thousands of surplus used tools. The Federal government alone has some 300,000 surplus machine tools, according to N. A. Olsen, director, Metalworking Equipment Div., of the Commerce Dept.'s Business and Defense Services Administration.

**How To Dispose**—The government would like to get rid of them. The question is: How?

Machine tool builders don't want to see them sold here, logically. They fear it would cut into sales of new equipment. Used machinery rebuilders and dealers complain that dumping of surplus machine tools by the government undercuts their business.

However, neither group has been able to offer a satisfactory plan to dispose of these surplus items.

The Higbee Plan—Recently, E. C. Higbee, manager of the Commerce Dept.'s Cleveland field office, visited India as part of a trade delegation. And he brought back one suggested solution to the problem of surplus tools.

Mr. Higbee notes that surplus farm products are given to many needy nations, or sold at below U. S. market prices. Why not do the same with surplus machine tools, he asks?

Such a program, he says, would get the tools out of the U. S. "where they would create havoc if dumped on the market." At the same time, they would aid India's industrial expansion program.

Need Simple Machines—India's metalworking industry "is in about the same shape as was the U. S. in 1910. They don't need automation—they have a large labor surplus—but they do need machines."

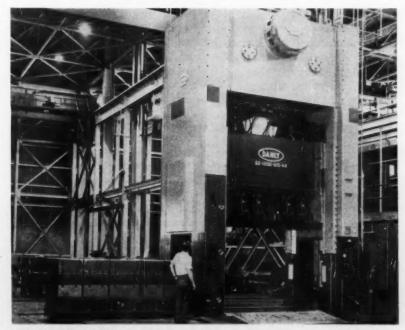
He points out that sending surplus machines to India wouldn't reduce the market for new machine tools. The country can't afford them and isn't prepared to buy them. **Propaganda, Too** — Even more important from the standpoint of the U. S. government, the propaganda impact would be tremendous.

Mr. Higbee favors a government to government deal, with India paying a modest, but reasonable, price for the tools. The U. S. would help establish a distribution setup.

Another suggestion has been for machine tool builders or used machinery dealers to establish distribution centers in India.

The surplus tools would be purchased from the U. S., shipped overseas where they could be rebuilt more cheaply with local labor, and then sold at a reasonable price.

### Change Dies in Only 5 Minutes



QUICK CHANGE ARTIST: Typical of the new presses (The IRON AGE, Dec. 10, 1959, P. 85) is Danly Machine Specialties' "Quick Change Press" which permits die changing with just 5 to 6 minutes downtime.

#### INDUSTRIAL BRIEFS

Patterson Div. Sold — International Process Equipment Co., Dayton, O., has bought the machinery division of the Patterson Foundry and Machine Co. from Ferro Corp. The plant, located in East Liverpool, O., makes capital goods equipment for the chemical processing industry.

Four Join Sterling—Sterling Bolt Co., Chicago, has acquired the Texokana Bolt & Nut Co., and the Gulf Coast Bolt and Nut Co. Earlier two other companies—the East Coast Nut and Bolt Co. and the Penn Bolt and Nut Co.—consolidated with Sterling. With these additions, Sterling now has manufacturing and distributing centers in New York City, Pittsburgh, St. Louis, Dallas, Houston, Milwaukee, and Chicago.

Warehouse in Queens—A new 15,000 sq ft mill depot will be occupied early next month by the Lewin-Mathes Co., division of Cerro de Pasco Corp. The warehouse, located in Queens, N. Y., is the first of several such depots to be built.

Student Aid—Scholarship grants and loans totaling \$466,046 have been awarded this year by Lehigh University. Metallurgical engineering students at the University received grants averaging \$776, according to Dean J. Douglas Leith. Among all engineering students the average award was \$883.

Rolling Along—Wisconsin's first fully integrated aluminum rolling mill has been placed in operation at Manitowoc by the Mirro Aluminum Co. The new operation will produce aluminum sheet and foil.

Getting Together—Shaw Instrument Corp. has acquired by merger the Ceramic-Metal Assemblies Corp. The newly combined companies will operate under the Shaw name, with general offices and enlarged manufacturing facilities to be located in Latrobe, Pa.

Going Up — Twenty Federal agencies will be housed in a new 23-story building at Pittsburgh. The structure, with metal and glass exterior, has been designed by Prack and Prack, and Altenhof and Brown, Pittsburgh architectural firms. Final drawings and specifications are scheduled to be completed in July, 1960.

To England—Fried Steel Manufacturing Corp., New York, has concluded an agreement with Weldall and Assembly Ltd., Stourbridge, England, by which the foreign firm will make and distribute Fried products on a world wide basis with the exception of the Americas and Canada. Fried manufactures materials handling equipment.

More Acid—The Neville Island sulfuric acid plant of Pittsburgh Coke & Chemical Co. will be expanded by 70 pct. Construction has started on the facility and completion is expected early in 1960.

Getting Bigger—A \$1.4 million expansion program is planned for the Electric Motor Div. of the A. O. Smith Corp. Expansion includes addition of 42,000 sq ft to the plant which will increase the production area by 45 pct. Also included are new tools and equipment for the addition. The addition is expected to be completed next April.

Oxygen Supply — A new automatically operated oxygen producing plant is in use at Middletown Works of Armco Steel Corp. The plant feeds high-purity oxygen to 14 openhearth furnaces at the facility. The new unit is part of a modernization and improvement program designed to increase production and efficiency at the Middletown Works.

Building Blocks—Baldwin-Lima-Hamilton Corp.'s Eddystone Div. has been awarded a contract for the construction of 880 laminated steel yoke blocks for the 3-billion electron volt proton synchrotron being built at the James Forrestal Research Center of Princeton Univ. In Full Control—Full ownership of Almetco, Inc., has been acquired by Olin Mathieson Chemical Corp. by purchasing the one-half interest formerly held by Textron, Inc. Almetco, with an aluminum extrusion plant at Nesquehoning, Pa., produces extrusions for use in the architectural, transportation, highway supply, and other fields.

Down Argentine Way — Industrias Kaiser Argentina, Argentine affiliate of Willys Motors, Inc., will manufacture the Dauphine car at its Cordoba plant under terms of a contract with Regie Nationale Renault. Over a year ago, a similar agreement was made with Willys-Overland do Brasil, the Brazilian affiliate of Willys Motors.

Full Power — General Electric has received a \$2.25 million order for a complete electrical system for an 11-in. three-strand merchant mill to be installed by a major eastern steel producer. The order includes electrical equipment for both the main drive and auxiliaries.

# GALVANIZED SHEETS (FLAT)

ASTM A93

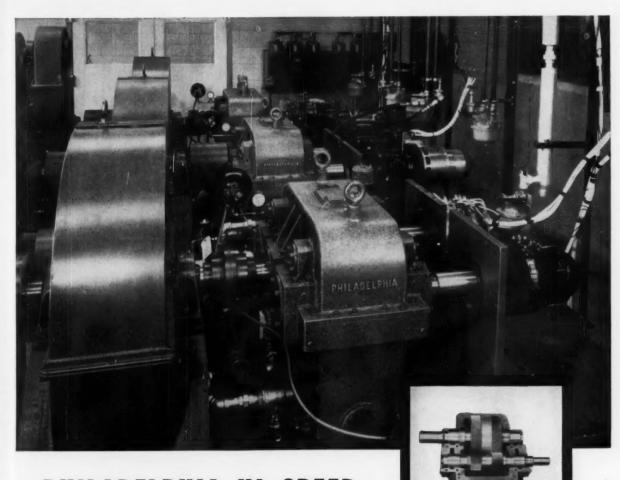
Lockforming Quality
Zinc Coating
1.25 oz. per sq. ft.

# IN STOCK IMMEDIATE SHIPMENT NEW YORK

28	Tons	22	GSG	48	×	96
45	Tons	24	GSG	48	×	96
76	Tons	24	GSG	48	×	120
93	Tons	26	GSG	36	×	120
3	Tons	28	GSG	36	×	96
117	Tons	28	GSG	36	×	120
11	Tons	30	GSG	36	X	96
		NEW C	RLEA	NS		
10	Tons	24	GSG	36	×	96
11	Tons	28	GSG	36	×	96
2	Tons	30	GSG	36	×	96
		HOU	STON			
20	Tons	24	GSG	36	×	96
35	Tons	24	GSG	36	×	120
19	Tons	26	GSG	36	×	120
15	Tons	28	GSG	36	×	120
	Tons		GSG	36	×	96
25	Tons	30	GSG	36	×	120

FABRIKANT STEEL PRODUCTS, INC. 620 Fifth Avenue, New York 20, N. Y. PHONE: Circle 7-8435

INDUST



# PHILADELPHIA HI-SPEED INCREASERS drive simulated "test flight on ground". . .

Testing of jet aircraft electrical power systems calls for exact duplication of tortuous flight conditions in the lab...complete to supersonic speeds! At General Electric Aircraft Systems Engineering Laboratory above, three Philadelphia speed increasers drive generators for simulating conditions of both low inertia, high acceleration reciprocating engines and high inertia, low acceleration jet engines. Each stand is powered by a 200 HP DC motor coupled to a Philadelphia 5.8:1 speed increaser. The drive system provides for adjustable speed at rated continuous power from 4000 to 12000 rpm with overload capacity of 300 HP for five minutes and 400 HP for five seconds.

To meet these exacting requirements for performance and continuous operation, Philadelphia HI-SPEED drives offer exclusive advantages in drive design . . . advantages you can't get anywhere else. Double opposed helical gearing is precision hobbed, precision tooth ground and dynamically balanced. Symmetrically arranged gearing balances loads on bearings and shafts. Shaft deflection is minimized . . . bearings last longer.

Philodelphio HI-SPEED Drives are available in standard units for speeds to 10,000 rpm at pitch line velocities to 10,000 fpm. 1 to 7100 HP. Ratios from 1:1 to 10:1 for high speed reduction or increase. Special HI-SPEED drives are furnished for higher speeds, horsepowers and ratios. Write today for your copy of our HI-SPEED catalog.

PHILADELPHIA GEAR CORPORATION Erie Avenue and "G" Street, Philadelphia 34, Pennsylvania

# philadelphia gear drives

Offices in all Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.

INDUSTRIAL GEARS & SPEED REDUCERS . LIMITORQUE VALVE CONTROLS . FLUID MIXERS . FLEXIBLE COUPLINGS

# Ohio Rolls

shaping metal for all Industry

#### **OHIO IRON AND STEEL ROLLS**

Chilled Iron Rolls

Carbon Steel Rolls Ohioloy Rolls Ohioloy "K" Rolls Flintuff Rolls
Double-Pour Rolls

Denso Iron Rolls Nickel Grain Rolls Special Iron Rolls

Nioloy Rolls

Forged Steel Rolls

The Ohio Steel Foundry Co.

LIMA, OHIO

UMA ... Virtually at the center of the steel industry

PLANTS AT

berg kelst dent Sh La

W. dent
O Sloa
Tayl
the
R

dent

adm

Corp

THE

AND

SPRINGFIELD

OHIO



R. C. Taylor, elected president, ACF Industries, Inc.

General Dynamics Corp., Stromberg-Carlson Div.—Dr. N. A. Finkelstein, appointed asst. vice president and director, research.

Sherman Products, Inc.—R. M. La Porte, elected president; V. J. Crampton, elected executive vice president.

Union Electric Steel Corp.—L. W. Cashdollar, elected vice president, sales.

Oglebay Norton Co.—E. W. Sloan, Jr., elected president; H. S. Taylor, elected vice chairman of the board.

Republic Steel Corp.—J. P. Sullivan, appointed asst. superintendent, Openhearth and Electric Furnace Dept., Gadsden, Ala., plant.



**F. E. Crist,** elected vice president, administration, Associated Spring Corp.

U. S. Steel Corp., Columbia-Geneva Steel Div.—D. E. Rice, appointed vice president, operations.

Dana Corp.—L. L. Melick, elected executive vice president and secretary, and L. L. Dodge, vice president-finance and asst. secretary.

Lake Erie Machinery Corp.— F. P. Iapalucci, appointed plant manager, Buffalo, N. Y.

Aluminum Co. of America—T.

J. Lannen, appointed manager, residential sales.



H. A. Tobey, elected vice president, manufacturing, Bearing and Rock Bit Div., The Timken Roller Bearing Co.

Borg-Warner Corp.—J. R. Madigan, appointed senior scientist, Roy C. Ingersoll Research Center.

Hooker Chemical Corp., Eastern Chemical Div.—J. E. Thornberg, appointed manager, market research, Sales Dept.

Van Straaten Chemical Co.— R. E. Wolff, named general sales manager.

The Yale & Towne Mfg. Co., Yale Materials Handling Div.—G. A. Wulf, appointed manager, Philadelphia materials handling sales and service branch.



W. T. Alderson, elected vice president, Ingersoll-Rand Co.

Avondale Marine Ways, Inc., Service Foundry Div.—Jim Riseden, appointed sales engineer, New Orleans, La.

Standard Steel Corp., Process Equipment Div. — M. C. Isheim, named manager, Los Angeles.

Standard Steel Corp., Cambridge Div.—L. F. Howard, appointed asst. director, engineering; W. F. (Continued on P. 162)



**B. A. Lucas, Jr.,** elected vice president, sales, Ingersoll Products Div., Borg-Warner Corp., Chicago.

(Continued from P. 161)

Dolke, district sales manager; and L. H. Bacon 3rd, asst. manager, manufacturing, Lowell, Mass.

Revere Copper & Brass Inc., Pacific Coast Div.—J. E. Ziegler, appointed asst. manager, building products, Los Angeles headquarters.

Aluminum Co. of America, Aluminum Structural Div.—R. C. Kasser, named manager, design and sales engineering.

Alco Products, Inc., Spring and Forge Div.—F. P. Beardsley, appointed marketing manager.

Bethlehem Steel Co., Pacific Coast Div.—W. L. Hanson, named superintendent, rolling mills.

Sharon Steel Corp. — A. G. Neese, promoted to general manager, sales.

Inland Steel Co.—M. S. George, named manager, tin plate and export sales.

Bethlehem Steel Co., Pacific Coast Div.—J. G. White, named asst. general manager, sales; J. L. Humphrey, appointed manager, sales, Seattle district office.



R. A. Pitcairn, appointed manager, marketing research, Crucible Steel Co. of America.



W. C. Butler, appointed manager, sales, Cleveland district, U. S. Steel Supply Div., U. S. Steel Corp.

The Eimco Corp., Tractor Div.— **Dorace Dodd,** appointed asst. manager.

General Electric Co., Chemical and Metallurgical Div.—Dr. C. E. Reed, appointed general manager.

Edgcomb Steel of New England, Inc.—R. R. Edgcomb, appointed sales manager.

Kaiser Aluminum International

—W. D. Sharpe, appointed area operations manager, Continental Europe; G. E. Weekley, area operations manager, Latin America, and



UTILITY APPLIANCE COMPANY installation

in Los Angeles features a 16 gauge x 48 inch wide cut-to-length
line—with automatic sheet piler and a 21 roll leveler to
produce top quality flat sheets for larger

panels. Let Stamco supply the economical answer to your shearing problems with long life machines.

Stamco, Inc., New Bremen, Ohio, U.S.A.

Slitting and Coiling Lines ● Cut-To-Length Lines ● Flying Shear Lines ● Power Squaring Shears ● Automatic Resquaring ● Corrugating ● Culvert ● Steel Mill Equipment

162

THE IRON AGE, December 17, 1959

W. R. and in Brown tions

w. to dis trict, Steel

AC Clark

Unigatuch Thom sales J. M. phis,

C. E. mill distric

Ele

diana town

E.

inten

W. R. Smith, manager, operations and investments in India; Lafayette Brown, appointed manager, operations analysis.



W. W. Clevenger, promoted asst. to district manager, Cleveland district, U. S. Steel Supply Div., U. S. Steel Corp.

ACF Industries, Inc. — J. F. Clark, elected chairman, Executive Committee.

United States Rubber Co., Naugatuck Chemical Div. — Arthur Thomas Jr., appointed commodity sales manager, Kralastic materials; J. M. Bolt, named manager, Memphis, Tenn., district sales office.

Electric Steel Foundry Co.— C. E. Frost, named manager, sales, mill products, Southwestern sales district.



E. A. Gilmore, appointed superintendent, seamless tube mill, Indiana Harbor Works, The Youngstown Sheet & Tube Co.

The Black & Decker Mfg. Co.— H. K. Shackelford, appointed industrial-automotive sales representative.



F. J. Millhouse, promoted to Pacific Coast sales manager, Electrode Div., Great Lakes Carbon Corp.



R. W. Updegraff, appointed general factory manager, Bearing and Rock Bit Divisions, The Timken Roller Bearing Co.

#### **OBITUARIES**

**P. J. Gibbons,** 69, former executive vice president, Vanadium Corp. of America.

Emanuel Hogenson, 71, former executive vice president, Chicago Vitreous Corp., Cicero, Ill.

G. H. Halpin, 69, vice chairman, Executive Committee, Minnesota Mining & Mfg. Co., St. Paul, Minn.

## WARD STEEL co.

#### PROMPT WAREHOUSE SERVICE ONLY

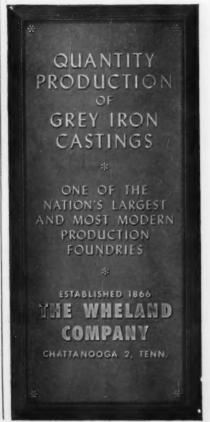
Most Complete Stock in America of

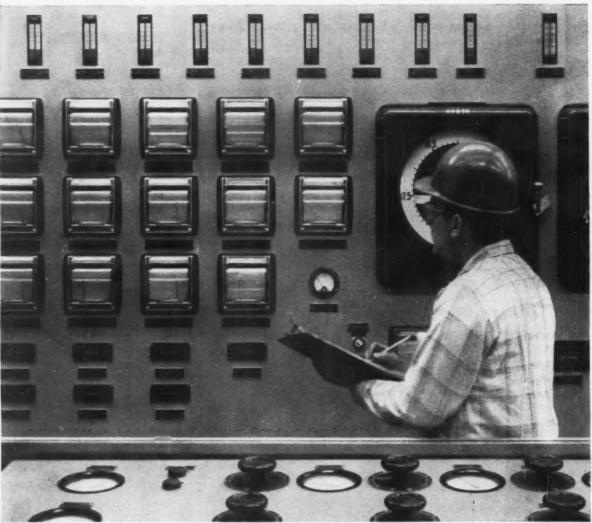
## BLUE TEMPERED SPRING STEEL

We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.

878 Rindge Ave. Ext. Phone UN 4-2460 CAMBRIDGE 40, MASS.

Branch 3042-3058 W. 51st Street, CHICAGO, ILL. Phone: Grovehill 6-2600





Foxboro control panel on Dwight-Lloyd Sintering machine at U. S. Steel's South Works, Chicago. Variables recorded by Foxboro Consotrols include temperature, pressure, level, flow and weight. Plant was designed and built by McDowell Company, Inc., Cleveland.

# It's Foxboro "small-case" Consotrols for new U.S. Steel Sintering Plant

Savings in panel space — and in control room construction costs — were both achieved at U. S. Steel when they installed Foxboro "small-case" Consotrol\* instruments for their new 5000 ton-a-day sintering machine at South Works.

Foxboro Consotrol Recording-Control Station met every U. S. Steel specification. Consotrols provide precise, dependable control — plus full-scale 4-inch records — in only one quarter the panel space required by conventional 12" instruments.

But panel savings are only part of the Consotrol story. Maintenance is easier, too. Not to mention accurate, dependable, trouble-free performance. Bulletin 13-18 has the complete story — write for it. The Foxboro Company, 8012 Neponset Avenue, Foxboro, Massachusetts.

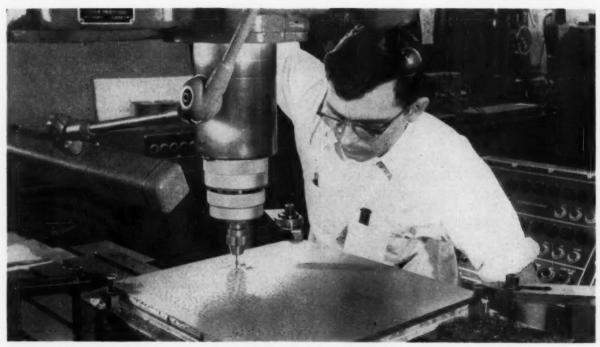
\*Reg. U. S. Pat. Off.



ab

are

me



PRECISION MACHINING: Numerically-controlled jig borer drills and reams 1429 holes in 21.3 hours.

# Let Statistics Put Sense Into Machine Tolerances

In some areas scrap-piles are mounting. In others, more reliable controls are needed to meet close tolerances.

Both areas need more reliable methods to control machine accuracy. Mathematics provides the solution.

• It's often stated that a machine "holds" 0.002 in., 0.0005 in. or some such value. But these values are not complete. That is, they are merely parts of a purchase requirement for a new machine or tolerance figures on a blueprint. They are bilateral specifications and do not show the true accuracy of a machine.

A vital point is overlooked. How consistent is the machine? How many times out of 100 or even 1000 tries will the parts come out to spec? You must know these "odds" in this age of close-tolerance needs.

Engineers at Pratt & Whitney Co., Inc., West Hartford, Conn., know how important it is to have reliable equipment. E. E. Kirkham, Chief Development Engineer, and H. A. France, Manager of Quality Control, spoke on this tolerance problem before a recent AIEE Conference on Machine Tools in Cleveland.

Their point was well taken. Men, machines, tools and materials are

hard to control. The variations caused by these factors underline the need for tolerances, scrap, rework and inspection.

Facing the Problem—The proper approach to this problem is statistical. Remember that no two parts produced by a machine are the same. This very fact forces engineers to make "statistical machine capability studies." This is necessary wherever scrap production gets out of hand, especially in fields of close-tolerance work.

This system studies two main areas. First, you must find out to what extent natural variations are likely to occur. Second, you must gather data directly from produc-

### **How Normal Pattern Looks**

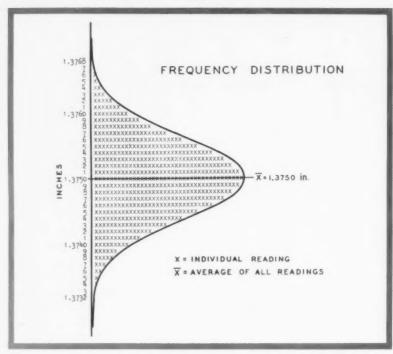


Fig. 1: Frequency of occurrence plotted against part size reveals a bell-shaped pattern, a common trait of normal frequency distribution.

## What Role the Sigmas Play

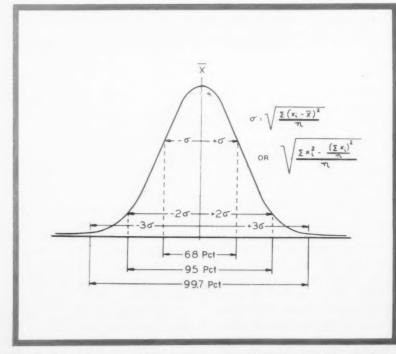


Fig. 2: Sigmas in a normal frequency curve spell the degree of probability. Sigma can be derived from either of the two formulas.

tion runs. With these data, it's possible to establish a machine's accuracy, based on statistics.

To understand the system fully, it's a good idea to review some elements of variation. First of all, variations have patterns.

On Sight—Half of the battle is being able to describe these patterns. In amassing data needed to form the pattern, measurements should reveal differences as well as dispersion traits.

Figure 1 reflects a "normal frequency distribution" pattern. The smooth curve drawn through the peaks of the columns of X's is known as a "normal curve."

The measure of the dispersion of values about their average is the standard deviation or root-mean-square of the deviations of all values from their average.

From such a graph, the missing link, s symbol, can be derived through one of the formulas in Fig. 2. This symbol, identified by the lower-case Greek letter sigma, is the standard deviation.

The Bell—Normal frequency distribution patterns can be spotted by their bell-shaped curves. Another trait of these patterns is spelled out in the table. Here, the percentages can be used as "odds" in a probability statement.

On its own feet, a bilateral spec is useless. But, when equated to some number of sigmas, it is supplied with the missing link. The spec then becomes useful and practical.

Although most variation patterns are normal, not all are of this type. The "odds" method won't apply to a rectangular frequency distribution. For example, plus-and-minus 1.67 sigma might contain 100 pct of the values in such a chart.

There are three more elements that affect variations. Cutting tool wear and temperature changes often cause drifts during production runs. Here, you can compute the average rate trend of progressive changes. This is done by measuring successively produced pieces.

who terr abo san tent trib

just

0.0

tim

too

clud

modeless

WOI

duc

fere trol use trol eve cur mu den req

of and tion poi pea poi bui

that assi tior 1-in tabi

imp

acc the fan littl

THE

(

Other Variables—Then there are times when operators must change tool settings. This factor is not included in the scheme.

Thirdly, it's very costly to get a wholly exact picture of most patterns. However, enough is known about the relationships between samples and machine output potential to predict an accurate distribution spread.

No longer is machine capability just a range function, such as 0.0006 in. Now you can tell much more about it. Suppose sigma — ±0.0001 in. At a glance, this implies that 68 pct of all parts produced will deviate from the nominal machine setting by as much as or less than ±0.0001 in.

However, it's more common to refer to the same variation as six times sigma = 0.0006 in. In other words, 99.72 pct of the parts produced will be within  $\pm 0.0003$  in. of the nominal machine setting.

Space Age Demands—It's a different story with numerically-controlled tools, though. Here, what used to be a variable is now controlled by design. So industry has every right to demand reliable accuracy. The machine tool builder must then submit statistical evidence that its product will do the required work.

Consider the positioning accuracy of numerically-controlled jig borers and rotary tables. This infers positioning to any point from any other point. Involved are both the repeatability of positioning at any point and the accuracy of the built-in linear yardstick.

Believe it or not, this is not an impossible task, despite the fact that a 60 x 48-in. jig borer table assumes as many as 600,000 positions in longitudinal travel with 1-in. increments. In fact, the same table assumes 480,000 positions in its transverse motion.

One can measure and control the accuracy of this setup, even though the number of positions reaches a fantastic size. It can be done at little cost, too.



**NUMERICAL CONTROLS:** More reliable tolerances in numerically-controlled machine tools can be realized through statistical methods.

## Know What Your Odds Are

Standard Deviation	Total Value	Range of Val. included Pct
± σ	100	68
± 2 σ	100	95
± 3 σ	100	99.7

Here and There—Unbiased sampling is the answer. But the samples must be pure samples, drawn at random. As a result, you can examine the capability of a machine tool slide with 50 to 60 random measurements.

Machine tool builders take pride in the accuracy of today's large and complex machines. They can't sit back and say they have gone far enough.

The seemingly impossible tasks

of achieving greater and greater accuracy become a little tougher.

What is needed then is an interest in creating new standards of terminology. This, in turn, will give rise to greater reliability in industry.

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

## Degas Steel with Lithium

### New Technique Cuts Down Gas Content in Stainless Steel

Gassy heats are the bane of the stainless steel melter.

Recent report cites success over this problem by addition of lithium to the molten steel plus purging with argon.

 Ridding steel of gases has long been a headache for steelmakers.
 It is a problem that has taken up many research hours and dollars.

Blowholes, seams, and large pipes are some of the most common defects that occur because of the presence of gases in steel. Gases are also blamed for flakes, embrittlement, haircracks, certain corrosion phenomena, and reduced mechanical properties.

The major culprits are suspected to be hydrogen, oxygen, and carbon dioxide. They can arise from a number of sources.

Gassy Heats Occur—The atmosphere plays an important role in this respect. Stainless steel producers, for example, experience particularly gassy heats during the "monsoon season" or high humidity period.

However, recent development work shows that adding lithium to the melt plus purging with argon may be an answer. This technique was described at the Electric Furnace Conference held early this month. The speaker was A. J. Nimeth, ass't superintendent for the Stainless and Strip Div. of Jones & Laughlin Steel Corp., Detroit.

"In reference to the gassy heats," Mr. Nimeth said, "stainless producers have spent a considerable amount of time, money, and effort to combat the introduction of hydrogen into the steel."

Try Drying Methods-These in-

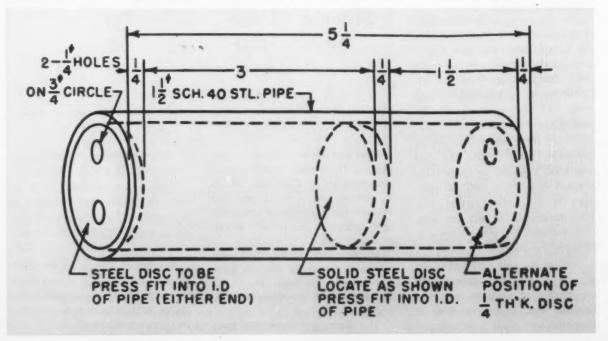
clude facilities for heating and drying the ore, scrap, ferralloys, and slagging materials prior to introduction into the melt. Sometimes, dry air or argon is blown into the furnace for purging the molten steel prior to deoxidation.

Lithium has been considered as an additive to steel for some time. This reactive metal combines readily with hydrogen, oxygen, nitrogen, and sulfur. It is currently providing clean and almost complete deoxidation for copper melts. And theoretically, it should do the job on steel better than most other degassers.

But the temperature of molten steel is much higher than the boiling point of lithium. The problem, therefore, is to keep the lithium in the melt long enough for its cleansing action to be effective.

Add Lithium in Capsules—Specially - designed capsules, as de-

## Special Capsule Contains Lithium for Degassing



LITH cast w

scribe method inserted after values capsulto prewith

Aft a 25tainin introd door

As the f Laugh nation argon

Nime raised again by th this

Fo prodi

THE I







LITHIUM CUTS DOWN GAS: Steel ingot on left, cast without any treatment, shows effects of gas. Center

ingot was treated with 24 oz of lithium. Note cleanliness of ingot on right after treatment with 30 oz.

scribed by Mr. Nimeth, are one method. Two ounces of lithium are inserted in a 1½-in. ID steel pipe after which the pipe is capped. The capsules are then dipped in wax to prevent the lithium from reacting with the moisture in the air.

After attachment to the end of a 25-ft steel bar, the capsule containing the lithium is ready to be introduced through the working door to the bottom of the furnace.

As soon as gas is observed in the furnace, melters at Jones & Laughlin proceed with the combination of lithium additions and argon purging.

"Prior to the addition," Mr. Nimeth pointed out, "the roof is raised 4-5 in. as a precaution against any pressure buildup created by the lithium as it vaporizes, for this may cause some buckling of the furnace roof."

Foote Mineral Co., Philadelphia, producers of the lithium used in this development, offer this step-bystep description of the reaction.

Agitates the Steel—A few seconds after the capsule is immersed, the lithium begins to vaporize and furiously agitates the steel. Almost simultaneously, some of the lithium vapor reacts with oxygen in the steel to form lithium oxide vapor.

The oxide has a low specific gravity and is self-fluxing. Hence, it cannot be trapped in the steel. This property is unique among deoxidizing metals.

Lithium metal vapor and, to a degree, lithium oxide vapor, mechanically scavenge hydrogen and other gases from steel. There is also reason to believe that the oxide will dissolve many refractory inclusions. Compounds that are formed by the chemical reaction rise to the surface and enter the slag.

At Jones & Laughlin, the practice of 2-oz lithium additions and argon purging continues until there are no signs of gas in the furnace; the heat is then tapped.

Pole Into Ladle — "When the ladle is 2/3 full," reported Mr. Nimeth, "the furnace is tilted back and an additional 4 oz of lithium is poled into the bottom of the ladle in two steps."

Reasons for the additional lithium include: possible pickup of hydrogen from the air during tap; possible pickup of hydrogen from the ladle.

The photographs clearly show the effects of this treatment. The tests were taken about 1 hour before tap on a heat of 430 stainless. Humidity was 75 pct.

The first 23-lb test ingot was cast before any treatment for gas. The second test was taken after a 24-oz addition of lithium. It shows some indication of gas in the center of the test ingot. Note the cleanliness of the third ingot cast after treatment with 30-oz lithium.

# Join Thick Steel Sections With Electroslag Welding

That "build or else" concept in Russia gives rise to many unusual designs in machinery.

In the field of welding, the Soviets boast of the electroslag process. An American company now offers one of its own.

■ Russia's invasion of space is a conversation piece among mill workers as well as research scientists. No one can dispute the fact that the Soviet Union has opened the door of a new age.

Hand in hand with this Russian conquest are many new developments. Many of them are in the field of machinery. Some of the Soviet's latest units were displayed in New York last summer. One of them was an electroslag welding machine.

Aroused by the spirit of competition, an American company is now marketing its own electroslag welder. Known as the Vertomatic welder, it's sold in this country by Arcos Corp., Philadelphia. The entire setup is imported from Europe.

Thick Sections—Where can Vertomatic equipment best be used? In the pressure vessel and shipbuilding fields or anywhere else where heavy sections must be welded. The machine handles plate and forgings from 1½ in, to more than 10 in.

in thickness. All welding is in the vertical position.

With electroslag welding, there's very little joint preparation. Nor is there need for any slag removal. Both of these are time-saving advantages.

The idea of welding in the vertical position (u s i n g g r a p h i t e molds) dates back to 1908 when the first patent was granted to a Russian engineer named Bernardos.

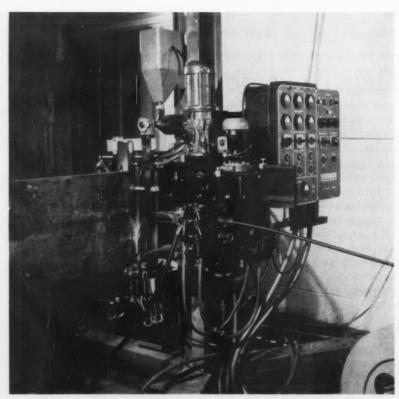
High Heats—In essence, it's an arcless single-pass process in which an electric current flows through a pool of molten slag. The resistance of the slag to the current creates a high heat. Welds are formed as the heat melts both the filler metal and the adjacent parent metal.

Vertomatic equipment can be applied to a variety of weld joints. These include butt welds, "T" joints, corner welds with inside fillets and reinforcing surface welds. The process has been used to make both longitudinal and girth seam butt welds in heavy walled vessels.

Deposition rates of filler metal (using a single electrode) range from 35 to 45 lb per hour. Welding with three electrodes will step this rate up to 105 to 135 lb of filler metal per hour. Of course, you only use three electrodes on much heavier sections.

Very Little Flux — There are many advantages to electroslag welding. For one thing, hardly any flux is lost through spatter. And the process only consumes about 5 lb of flux for each 100 lb of weld metal.

Once welding has started, there's no need to reposition. The usual type of rigger's handling equipment is adequate for most setups.



WELDING THICK PLATES: Electroslag welding equipment joins heavy sections of plate in the vertical position in a single pass.

170

THE IRON AGE, December 17, 1959

It ca into Trage equi moto relay shoe

base mass the clam shoe slag

ward contr wires A use wires

> deep types the weld

wire

will wire guid wire later

and mov weld Y trans

forn ping Ir net type

feed A earli mak

thro

weld

The entire setup is mobile, too. It can be moved to the work, even into the field if necessary.

The complete electroslag package includes a variety of basic equipment, including a transformer, motor drives, a control panel, a relay cabinet and special copper shoes.

The Frame—The main positioning parts of the setup are a tripod base mounted on rollers, a vertical mast and a boom. Moving up with the boom are two copper shoes, clamped against the work. The shoes form a dam for the molten slag and weld metal.

There are probes on the face of each shoe. One actuates the upward movement, while the other controls the flow of flux when solid wires are used.

Arcos engineers recommend the use of flux-cored rather than solid wires. This doesn't mean that solid wires can't be used. They can.

But flux-cored wires will provide deeper weld penetrations than solid types. And alloys can be added to the flux cores to give the desired weld metal properties.

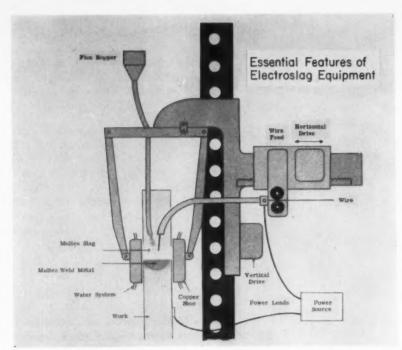
Choice of Wires—The machine will operate with one, two or three wires, fed through suitable wire guides. A drive device moves these wire guides back and forth in a lateral motion.

Also provided are a control panel and flux hopper. A motor drive moves the entire boom upward as welding progresses.

You need a specially-built ac transformer for each electrode wire used. Operating traits of these transformers can be varied from droopping to constant potential.

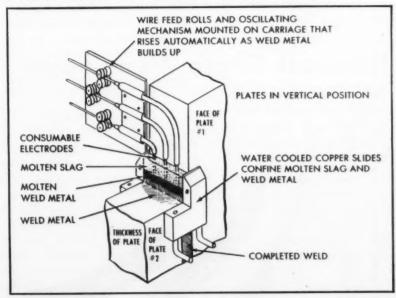
In addition, there's a relay cabinet to house a series of industrial type relays. They are actuated through the control panel. Wire feed reels are also provided.

Adapts to Most Joints—As stated earlier, electroslag welding can make most conventional types of welds. It does an excellent job on



FEATURES OF THE SETUP: Water-cooled copper shoes determine the weld area. They move up as the weld metal builds up.

## How the Welds Are Made

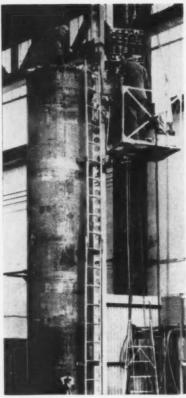


mild steel. The Russians, moreover, claim success in welding heavy sections of stainless and low-alloy steels.

The first step in the process is developing a slag pool, 1 to 1½ in. deep. This molten pool provides an easy path for the flow of electric

current between the filler wire and the work.

As soon as this happens, the flow of current is diverted from the arc to the molten slag. At this point, an increase in welding voltage to about 45 to 55 v should be made. Such a jump provides the



TANKER WELDING: Vertomatic process joins two half cylinders, each 334 in. thick, to form stern shaft tubes in French shipyard.

heat needed to form a good weld.

It's a simple matter to prepare the joints for welding. Square cuts on work edges will do the trick. Edges should be ground slightly to allow smooth movement of copper shoes against the face of the work.

Kept in Line—U-shaped aligners aid in aligning and maintaining the gap between the two workpieces. Tack welding the legs of these shapes onto the work faces insures free upward movement of the shoes.

To get the welding process under way, a pocket starting tab should be used to build up the proper depth of slag before welding reaches the work. Two run-off tabs are also needed in finishing off the weld. They provide the dam for the slag.

All operations, directed from a control panel, are mostly automatic. Switching to manual gives the operator a chance to integrate the various movements.

During the "start-up" period, when the slag melts into a pool, the operator adjusts the controls to effect changeover from constant current to constant voltage traits.

Then the setup becomes fully automatic.

Stirring the Weld—Wire is not only fed into the slag but moved back and forth through the molten pool. This so-called stirring action helps distribute the heat evenly.

Water-cooled probes in the lower half of each shoe sense the buildup of weld metal. Every time the slag touching the probe cools enough to be non-conductive, the probe starts the upward movement through the relay circuit.

The rising motion takes place only when the wire dwells at one side or other of the weld before reversing its motion. Upward motion continues until the probe comes in contact with conductive molten slag. This causes the relay to kick out, thereby stopping the motor.

Any alert workman can learn how to operate this equipment with a week's training. The same worker can adapt his knowledge to production welding within a month.

Holds Its Own—To date, Arcos has been able to duplicate the properties foreign countries have reported on manganese-moly welds in 3-in. thick medium-carbon steel plate. Macrographs reveal the same coarse dendritic patterns.

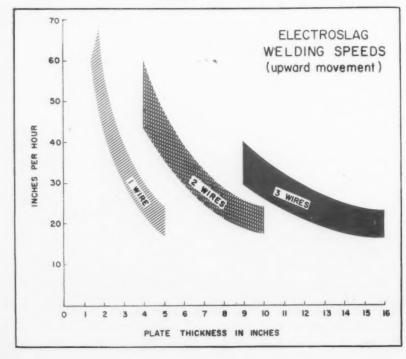
Mild steel deposits in the same size plate give clean, uniform ferrite-pearlite microstructures. Arcos engineers a c h i e v e this using a special composite wire.

When new coils are needed, just feed the wire into the feed rolls. From then on, the wire will move automatically. No lost motion.

There seems to be little distortion due to shrinkage after cooling. Plates welded do not bend at the joint, despite the heat buildup from single-pass welding.

Electroslag welding does not replace arc welding. It's designed to weld thick sections, 2 to 10 in. thick. And the savings in labor make it a process worth looking into.

## Thickness Gages Wire Choice



172

THE IRON AGE, December 17, 1959

a cre movi

> • H 12,0 prob of ste put want

> > TI

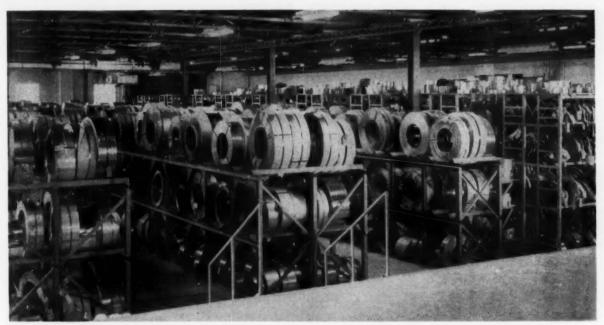
millvary pour Smal

lar a

is th

less

THE



GIVES EASY ACCESS: With new storage rack, it takes only minutes to locate a coil of alloy steel.

# Design Rack for Coil Storage

Too often, coils are "lost" in a crowded mill. Or it may mean moving tons of stock to get at a certain coil.

One answer is this easily constructed rack.

• How would you keep track of 12,000 different coils of steel? The problem is not knowing the amount of stock—but rather where you can put your hands on it when you want it

This can be quite a chore for a mill—particularly when the coils vary in weight from less than a pound to many hundreds of pounds. Small coils can be easily "lost."

Contains the Coils—A rack, specially designed to contain the coils is the answer for the Ulbrich Stainless Steel Co., Wallingford, Conn. Anyone can easily construct a similar rack from angle-iron, I-beams and channels.

Why does the Ulbrich mill require such a large inventory? Many years ago, Fred Ulbrich foresaw the need for someone to fabricate metals in the odd sizes, gages, and tempers. There were bound to be many customers who need only short lengths of non-standard stock.

Need Large Inventory—He decided to specialize in the small order. And having a lot of different size coils on hand obviously makes the job easier.

In addition to stainless steels, the inventory includes such alloys as Rene 41, Inconel X, AM-350, AM-355, Hastelloys, A-286, 17-7 PH and PH 15-7 Mo.

Today the mill is probably one of the quietest mills in the country. Most of the time is spent not in rolling but in setting up.

Set-Up Takes Time — For example, it may require 30 minutes to set up a Sendzimir mill for a particular coil. But the rolling op-

eration may take only 1-2 minutes since the order may be nothing more than a 4-ft length.

Despite this apparent disregard for time, too much time cannot be spent searching through coils scattered over the mill floor for the proper coil out of which to process the order. And very often, it would mean moving tons of material to get at one coil.

Heavy Coils No Problem — As shown in the photograph, the rack offers easy access to all the stock. Heavy coils can be lifted from the top level by means of a movable overhead hoist.

Each coil is labeled with its weight, gage, width, and temper. A master file lists this data together with the coil's precise location by aisle, rack, and level.

Now, when an order is ready to be processed, it takes only a matter of minutes to locate the proper coil.



IN THE GROOVE: The bonding adhesive is applied to the frame extrusion with a special applicator.



ASSEMBLED CASE: After assembly, the container is squared and held with steel strappings.

# Adhesive Bonds Metal Container To Withstand Rough Handling

It costs a lot of money to ship instruments—damage free.

A new metal container, joined by an adhesive, gives the strength, water-tightness and lightweight construction that's needed for rugged use.

Use of adhesive-bonding during assembly of watertight, metal shipping containers can reduce your design and production costs. Formfitting lightweight receptacles, meeting strict military specifications, are easily and quickly assembled on the spot.

The main use is for shipping, housing and storage of electronic

instrumentation and complex mechanical apparatus. Container size and shape requirements vary quite a bit; therefore quick availability—at low stock inventories—required a new design concept.

Use Modules — An erector set principle, known as the Modular Packaging System, is now being used by the Zero Mfg. Co., Burbank, Calif. This system allows the entire shipping case to be held together with adhesive bonds. The bonds withstand service applications from —67°F to +250°F.

Framework of the metal receptacles consists of aluminum extrusions which slide over corner castings. Aluminum sheets fit into grooves in the framework and form the top, bottom and side panels. The adhesive bonds hold the entire case together.

Assembly Steps—Extrusions are first cut to desired size. Next, the adhesive is applied to the corner castings with a special applicator. Then you slide the extrusions over the corner castings to form the framework.

Grooves which are an integral part of the extrusions are filled with the epoxy resin adhesive. Insert the aluminum sheets into these grooves and complete the frame around the panels.

stape main This ers a ducti

ing t 350° pass proce adhe brush

hesiv stren ting const

are i

the in

and/is high in the room

ers I Co., tile a life.

cuts
Welder
eliminate probate are I
chan

disto facto limit done full used

Pa cause The

THE

Steel strapping tape bands the container together temporarily, after the assembled unit is squared into shape. The bonding adhesive remains malleable until it is cured. This means that assembled containers are easy to square in the production stage.

Easily Cured—In one hour, curing takes place at a temperature of 350°F. No volatile by-products pass off—even during this curing process. After curing, the excess adhesive is removed with a wire brush.

Painting the case, after adding the interior bracketry and other accessories, is the final step.

High Strength Joints—The adhesive bonds produce joints of high strength and rigidity; thus permitting the use of lighter materials for construction. This means that both material costs and shipping weights are reduced.

Resistance to bending, cracking and/or shattering under shock loads is high. Average sheer strengths are in the range of 4670 psi at normal room temperatures and 4630 psi at 180°F.

The liquid adhesive, a product of the Adhesives, Coatings and Sealers Div., Minnesota Mining & Mfg. Co., St. Paul, is 100 pct non-volatile and provides unlimited working life.

Low Cost — Simplified design cuts production costs about 25 pct. Welding and brazing operations are eliminated. Close tolerances in machining of mating parts become a problem of the past. Also omitted are hole drilling operations for mechanical fasteners.

The rejection rate tumbles. Heat distortion is no longer a major factor. Stress concentrations, at limited points of attachment, are done away with. This allows the full strength of the material to be used.

Production costs are also cut because many manhours are saved. The adhesive bonds automatically provide an efficient seal at all seams; therefore the time and cost of a separate sealing or gasketing operation is eliminated. This is important because all containers must be watertight.

Disassembly is easily accom-

plished by heating the case to a point several hundred degrees in excess of the curing temperature. The bonding adhesive loses its strength at the elevated temperature and permits the container to be taken apart with ease.



HELD WITH ADHESIVE: This cross section of the shipping container shows how grooves, filled with adhesive, hold parts together.



FRAME ASSEMBLY: Extrusions slide over corner castings to form frame.

## Diamond Grit Dresses Wheels

Diamond particles in a powdered metal matrix dress grinding wheels evenly.

As the metal mold wears, it exposes a fresh cutting edge of diamond grit.

 Dressing a grinding wheel with a single-point diamond tool requires frequent removal or turning of the dresser throughout its life. A new technique eliminates this problem.
 It automatically exposes fresh diamond cutting edges at a uniform rate.

Small diamonds, cemented to-

gether by a powdered metal matrix, form the heart of the tool. These tools dress centerless grinders in several departments of Pratt & Whitney Aircraft Div. of United Aircraft Corp., East Hartford and North Haven, Conn. Results so far look promising. The company is getting longer tool life and over-all economy.

Uniform Wear — As the tool dresses the wheel face, the metal matrix wears away at a normal uniform rate. This exposes fresh cutting edges of diamond grit. In using this new tool, there's no need for removing or turning it.

These tools, made by the Koebel Diamond Tool Co., Detroit, dress grinding wheels more evenly than the tools used before. The wheels thus produce finer micro-finishes on machined parts. All this takes place with a reduction in dressing frequency.

Performance of these new diamond fragment tools is consistent. Once an operator sets a job up, the life of the dresser can be accurately predicted.

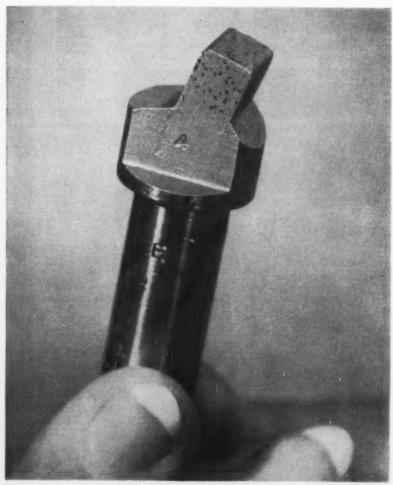
An Example—A standard 20 x 4 x 12 in. abrasive wheel finishes the outer diameter of steel weight balancers for jet engine compressors. Strict specifications require tight machining tolerances. A surface finish of 20 microinches is also required.

The finished parts are only 0.6-in. long; however, the centerless grinder on which machining takes place has a standard wide-faced wheel. This allows the grinder to handle other jobs when the balance cylinders, a low production item, are not required.

An automatic cycling device holds the impregnated diamond dresser. This mechanism, located on the opposite side of the grinding wheel from the machining position, dresses the wheel after it grinds 80 to 100 parts. Routine spot gauging of the finished pieces shows any need for more frequent dressing.

Dressing Cycle—The automatic dresser cycles in about 3 minutes. During the dressing operation, the wheel's machining speed is maintained. Size of the dressing cut depends on the finish requirements of the job. For the steel weight balance cylinders, the dresser takes a 0.0015-in. cut from the wheel at each dressing.

If the wheel becomes glazed, the cut is increased. The small diamonds do not tear whole grains of abrasive particles from the wheel face.



**DRESSING TOOL:** Impregnated diamonds form a fresh cutting edge as the tool wears. This insures a clean cut on grinding wheel face.

PROVED PERFORMER IN AEROSPACE...

Acme-Newport Steel

1

U.S. Army Nike Hercules

Modern facilities, 75 years' steelmaking experience and advanced technical skills are the outstanding elements in Acme-Newport's continuous contribution to the nation's greatest project: self-preservation. Aerospace demands uncompromising adherence to specifications... uniform quality... dependable performance in action. These characteristics in our aircraft quality alloy and carbon grades of plate, sheet and strip make Acme-Newport the logical steel source of prime and subcontractors who manufacture countless components in rockets, missiles, planes and ground support equipment.

For your quality steel requirements, in or out of defense work, contact Acme-Newport.



Acme-Newport Steel

A SUBSIDIARY OF



COMPANY

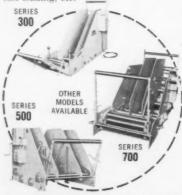
## why pull against heavy coil weights

when it's so easy to draw from this slack loop!



Benchmaster Koil-Kradles form a slack loop from which any type of machine can effortlessly draw without pulling against the weight of a heavy coil! A complete range of Koil-Kradles sizes now cover coil capacities to 20,000 lbs. and stock widths up to 50 inches!

All Benchmasters are economically priced, yet contain such important features as Fully-Powered and Hardened Rolls, Anti-Friction Bearings, Strutted Frames, Fast Loading Pinch Rolls (standard equipment on many models), Variable Time Delay for reducing intermittency of operation, Adjustable Guide Plates, Reversible Motors for rewinding, Open Throats for fast loading, etc.



Also available: BENCHMASTER STRAIGHTENERS, KOIL-KRADLE-STRAIGHTENER COMBINATIONS, and COMBINATION FEEDING MACHINES.

WRITE FOR DESCRIPTIVE CIRCULARS on all Benchmaster press room equipment. Describe your job for personal recommendations!



1835 West Rosecrans Ave. . Gardena, Calif.

#### PATENT REVIEW

# New Patents In Metalworking

#### **Backing Rolls**

Mounting for backing rolls, C. Volkhausen (assigned to Scholemann A. G., Dusseldorf, Germany), Oct. 20, 1959. In a rolling mill, the working rolls are driven not directly but by friction drive from the driven supporting rolls. The capital cost of the usual mill is lessened while still enabling choice of diameter and length of the working roll. No. 2,909,088.

#### **Sheet Lubricator**

Machine for lubricating metallic sheets, F. Ungerer, Oct. 20, 1959. Improved machine for high-speed oiling of sheet metal or steel strip prior to shipment from the mill to a manufacturer. A pair of finishing oiling rollers is used. No. 2,-909,150.

#### **Electric-Arc Melting**

Method of improving the quality and productivity of electric arc furnace steel, W. E. Schwabe (assigned to Union Carbide Corp., a corp. of N. Y.), Oct. 20, 1959. Method of improving and controlling the arc stability of a hollow furnace electrode so as to substantially reduce the melt-down and/or refining period of a metal charge in an electric arc furnace. No. 2,909,422.

#### **High-Temp Steels**

Austenitic Cr-Mn-C-N steels for elevated temperature service, Chi-Mei Hsiao, E. J. Dulis, and P. Payson (assigned to Crucible Steel Co. of America, Pittsburgh), Oct. 20, 1959. A low-Ni, low-Co austenitic steel having high creep strength and suitable for service at elevated temperatures in planes, missiles, etc., comprises 0.35 to 0.65 pct C, 11 to 13 pct Mn, 16 to 24 pct Cr, 0.3 to 0.7 pct N, 3 to 5 pct of elements of the group Mo, V, W, and Cb, 0.2 to 0.7 pct Si, and the balance Fe. No. 2,909,425.

#### Ferrous Alloys

Ferrous base alloys, F. M. Richmond, W. J. Pennington, and R. W. Koffler (assigned to Universal-Cyclops Steel Corp., Bridgeville,

"Patent Review" appears in the third issue of The IRON AGE each month. Look for it in the January 21 issue.

Pa.), Oct. 20, 1959. A precipitation - hardenable alloy possessing high strength at elevated temperatures consists of about 0.075 pct C, 25.5 pct Ni, 16.32 pct Cr, 3.87 pct Ti, 0.88 pct Cb and Ta, 0.067 pct Zr, 0.0016 pct B, and the balance Fe. No. 2,909,426.

#### **Titanium-Clad Steel**

Titanium or zirconium clad steel, F. C. Wagner (assigned to Horizons Inc., Princeton, N. J.), Oct. 20, 1959. In producing titanium or zirconium clad steel, a composite piece is formed of the steel base, the cladding metal, and an intermediate layer of one of the bonding metals chromium, cobalt, molybdenum, and silver. Or, a layer of silver is interposed adjacent the titanium and a layer of nickel adjacent the steel. The composite is heated to at least 1400°F and com-

pressed to about half its initial thickness. Nos. 2,908,966 and 2,-908,969.

## Preserving Refractory

Method of retarding disintegration of blast-furnace lining, T. F. Berry (assigned to U. S. Steel Corp., a corp. of N. J.), Nov. 17, 1959. To retard destruction of clay blast furnace refractories caused by carbon deposition, a space is left between lining and shell, and filled with a mixture of high-sulphur coke and a thermally insulating granular material, such as clay, grog, crushed blast-furnace slag, exfoliated vermiculite, or the like. No. 2,912,740.

## Open-Hearth Control

Combustion process, W. C. Simpson (assigned to Shell Development Co., New York), Nov. 17, 1959. Method for improving and controlling the radiant heat or emissivity of flames produced in open hearth furnaces during steelmaking operations. No. 2,913,043.

# Shell Molding

Shell molding, H. C. Kretz (assigned to Cooper Alloy Corp., Hillside, N. J.), Nov. 17, 1959. Method of shell molding alloys high in nickel, especially stainless steels. Ferrosilicon is added to a cold charge before melting. No. 2,913,-337.

# Conditioning Wire

Continuous method for conditioning wire, G. W. Bell (assigned to Northwestern Steel & Wire Co., Sterling, Ill.), Nov. 17, 1959. In the continuous manufacture of welding rod stock, improved apparatus and method are provided for cleaning, brightening, and lubricating the elongated raw metal stock for drawing. No. 2,913,354.

Copies of U. S. Patents are available at 25¢ each from Commissioner of Patents, Washington 25, D. C.





This 1300-pound URICK casting (a fan cooled motor stator frame made to Navy specifications) will withstand extra stress and strain and has better corrosion resistance because it is Ductile Iron. URICK recommends and successfully casts Ductile whenever greater tensile strength and higher impact value are of prime consideration because it has most of the advantages of steel, yet because of its high molten fluidity, it will take intricate shapes not possible with other high strength metals. Other advantages are-Ductile castability permits weight reduction while maintaining required physical properties superior machinability reduces machining time and consequently results in longer tool life. There are other advantages and economies to Ductile when recommended, engineered, and cast by URICK, ask about them.

This fan cooled motor stator frame to US NAVY speci-fications is east in 16 different sizes from 16" to 42".

Send for Bulletin on URICK's Ductile ... ask for catalog on URITE gray iron and URICK's facilities tool? acilities, too! Remember, URICK starts with 'U.

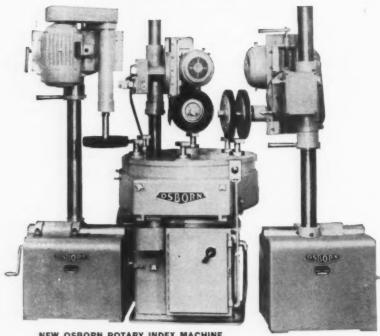




LICENSED UNDER PATENTS OF THE INTERNATIONAL NICKEL COMPANY., INC.

To cut your metal finishing costs . . .

# OSBORN ROTARY INDEX MACHINE



NEW OSBORN ROTARY INDEX MACHINE
Units can range from manual to fully automatic operation

# Unique "building block" design means unlimited production flexibility

**NEWEST ADDITION** to Osborn's broad line of metal finishing machines are these Rotary Index units. Capability: significant increase of your production capacity.

Most important feature — production men can economically "build" custom metal finishing machines from basic "building block" components . . . finishing heads, index tables and electric controls. Other advanced design and construction features make these new Osborn Metal Finishing Machine units worth your immediate investigation.

Your Osborn field specialist has latest application data on a wide range of cost-saving finishing methods. And an Osborn Analysis—made in your plant—is the first step to pinpoint savings on your operations. Write for details. The Osborn Manufacturing Company, Dept. F-90, Cleveland 14, Ohio.

# THE OSBORN MANUFACTURING COMPANY

METAL FINISHING MACHINES ... AND FINISHING METHODS POWER, PAINT AND MAINTENANCE BRUSHES FOUNDRY PRODUCTION MACHINERY



## FREE LITERATURE

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 181.

The

mor

ser

no e

num

Die

man in tl

est i

serie

clear erati

Fo

Tol

tors,

hors

four

tric !

Tul

gives

tubu

char

cour

are c

Bi-

in a

lurgi

The

two

the

Nun

trate

casti

Eng

Hο

tion

THE

Si

S

# **Weighing Systems**

A 48-page catalog presents a complete line of equipment for weighing, batching, and proportioning systems. A section is devoted to various types of associated feeding equipment. (The Jeffrey Mfg. Co.)

For free copy circle No. 1 on postcard, p. 181

# **Gas Welding Rods**

An eight-page bulletin describes gas welding rods which meet the requirements for fabricating ferrous metals and weld practically all metals of this class. (American Chain & Cable Co., Inc.)

For free copy circle No. 2 on postcard, p. 181

#### **OBI** Presses

A new series of open-back inclinable presses, featuring an instant-engaging, low-inertia friction clutch and brake, is covered in a 24-page bulletin. (Niagara Machine & Tool Works.)

For free copy circle No. 3 on postcard, p. 181

# **High-Temp Fasteners**

Self-locking nuts suitable for applications over 800°F are described in an 80-page illustrated catalog. Included are technical data pertaining to high-temperature terminology and such phenomena as stress rupture, creep, and relaxation strength. (Elastic Stop Nut Corp.)

For free copy circle No. 4 on postcard, p. 181

#### **Torsion Testers**

The technique and operational principles of torsion testing, as well as a line of torsion testing machines, are discussed in a 10-page bulletin. (Tinius Olsen Testing Machine Co.)

For free copy circle No. 5 on postcard, p. 181

THE IRON AGE, December 17, 1959

#### FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

#### Die Sets

Some of the services that die-cast manufacturers render to help users in their jobs are outlined in the latest issue of Die Set Digest. A new series of bushing attachments which clean and lubricate guide pins in operation is announced. (The Producto Machine Co.)

For free copy circle No. 21 on postcard

#### **Torque Motors**

ie

IS

11

n

81

n-

n

1e

81

n-

gy

h.

181

nal

ell

ıa-

ige

la-

181

59

Standard and special torque motors, both ac and dc fractionalhorsepower types, are covered in a four-page catalog. (The Ohio Electric Mfg. Co.)

For free copy circle No. 22 on postcard

#### **Tubular Rivets**

A tubular rivet selection chart gives specifications for three basic tubular rivets in a pocket-size slide chart. Truss-head, oval-head, and countersunk-head types, in 20 sizes, are covered. (Townsend Co.)

For free copy circle No. 23 on postcard

# **Bi-Metallic Casting**

Bi-metallic casting, as described in a brochure, is a method of metallurgically bonding dissimilar metals. The method molecularly unites the two metals, and provides parts with the desirable properties of both. Numerous applications are illustrated, and facilities for bi-metallic casting are offered. (Arthur Tickle Engineering Works, Inc.)

For free copy circle No. 24 on postcard

# **Hoist Specifications**

"HMA-200 Standard Specifications for Hand Chain Hoists" is an eight-page booklet of tables and recommended minimum standards on all types of hand chain hoists. (Hoist Manufacturers Assn.)

For free copy circle No. 25 on postcard

## **High-Impact Plastics**

"High-Impact Plastics Solve Design Problems" is a reprint of a four-page article from The IRON AGE, May 14. It discusses design advantages of these plastics and lists hints on how to design parts that will be produced by molding. (Continental-Diamond Fibre Corp.)

For free copy circle No. 26 on postcard

#### Steel Collar Uses

Sixteen basic ways for putting steel collars to work in moving parts or machinery are suggested in a brochure. A line is offered in 45 sizes for shafts from 1/16- to 3-in. diam. Cast-iron sizes range from 3 3/16 to 4 15/16 in. (Standard Pressed Steel Co.)

For free copy circle No. 27 on postcard

#### Servovalves

A 24-page brochure illustrates a company's engineering and production facilities for development of electrohydraulic servo components. (Moog Servocontrols, Inc.)

For free copy circle No. 28 on postcard

#### Fluid Power Units

Various types of industrial fluid power equipment are illustrated in a 16-page catalog. Included are pumps, feed pumps, motors, transmissions, cylinders, servocontrols, and valves of various types. (Oilgear Co.)

For free copy circle No. 29 on postcard

# **Plating Equipment**

An eight-page bulletin describes a line of plating equipment and supplies, including all equipment for metal preparation. (Frederick Gumm Chemical Co.)

For free copy circle No. 36 on postcard

## **Stainless Electrodes**

Full specifications on an extended line of stainless-steel elecPostcard valid 8 weeks only. After that use 12/17/59 own letterhead fully describing item wanted.

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

				-					
10	9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11
30	29	28	27	26	25	24	23	22	21
40	39	38	37	36	35	34	33	32	31
50	49	48	47	46	45	44	,43	42	41
60	59	58	57	56	55	54	53	52	51
70	69	68	67	66	65	64	63	62	61
80	79	78	77	76	75	74	73	72	71
90	89	88	87	86	85	84	83	82	81

If you want more details on products advertised in this issue fill in below:

Page .......Product .......

Page .			. P	100	duc	ct					*		4								×	8 8		 *	
Page .	100	duc	ct											e +			. *			 ×					
	INV	AL	ID	W		H	-	-	•				-		Y	N	A	R	Al	E-					
Name	****					* #	*			. ,	*				 ×	 •			*			*			
Title				* * *				* *							 *							*			
Produc	t M	anu	fac	tu	rec	1								* *		 *									
Compo	ony									 													 	 	
Co. A	ddre	SS						2 8		 *		,					8								

City ...... Zone .... State .......

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

R D States A P WILL BE PAID O 4 > 3 \_ s Z 0. malled ш 20 S Recessory STAGE S ш ш SIN I pertage 2

m º

Post Office Box 77, Village Station NEW YORK 14, N. Y.

THE IRON AGE, December 17, 1959

Postcard valid 8 weeks only. After that use 12/17/59 own letterhead fully describing item wanted.

Circle numbers for Free Technical Literature.
Design Digest, or New Equipment:

			, n				_	
9	8	7	6	5	4	3	2	1
19	16	17	16	15	14	13	12	11
29	28	27	26	25	24	23	22	21
39	38	37	36	35	34	33	32	31
49	48	47	46	45	44	43	42	41
59	58	57	56	55	54	53	52	51
69	68	67	66	65	64	63	62	61
79	78	77	76	75	74	73	72	71
89	88	87	86	85	84	83	82	81
	19 29 39 49 59 69 79	18 19 28 29 38 39 48 49 58 59 68 69 78 79	17 16 19 27 28 29 37 38 39 47 48 49 57 58 59 67 68 69 77 78 79	16 17 16 19 26 27 28 29 36 37 38 39 46 47 48 49 56 57 58 59 66 67 68 69 76 77 78 79	15 16 17 16 19 25 26 27 28 29 35 36 37 38 39 45 46 47 48 49 55 56 57 58 59 65 66 67 68 69 75 76 77 78 79	14     15     16     17     18     19       24     25     26     27     28     29       34     35     36     37     38     39       44     45     46     47     48     49       54     55     56     57     58     59       64     65     66     67     68     69       74     75     76     77     78     79	13     14     15     16     17     16     19       23     24     25     26     27     28     29       33     34     35     36     37     38     39       43     44     45     46     47     48     49       53     54     55     56     57     58     59       63     64     65     66     67     68     69       73     74     75     76     77     78     79	2 3 4 5 6 7 8 9 12 13 14 15 16 17 18 19 22 23 24 25 26 27 28 29 32 33 34 35 36 37 38 39 42 43 44 45 46 47 48 49 52 53 54 55 56 57 58 59 62 63 64 65 66 67 68 69 72 73 74 75 76 77 78 79 82 83 84 85 86 87 88 89

If you want more details on products advertised in this issue fill in below:

Page	Product	*************************
Page	Product	
Page	Product	

#### INVALID WITHOUT COMPANY NAME— TYPE OR PRINT

TYPE OR PRINT	
Name	
Title	
Product Manufactured	
Company	
Co. Address	
	*******

City ..... Zone .... State ......

#### FREE LITERATURE

trodes, covering all AWS-ASTM types, are presented in a four-page bulletin. (Harnischfeger Corp.)

For free copy circle No. 31 on postcard

#### **Precision Switches**

A data sheet describes a new series of precision two-circuit switches for use on machine-tool limit and control mechanisms. They feature compact size and long life. (Micro Switch)

For free copy circle No. 32 on postcard

#### **Elevator Furnaces**

A bulletin describes a complete line of electric elevator furnaces for batch annealing of standard and pearlitic malleable iron. (General Electric Co.)

For free copy circle No. 33 on postcard

# **Metalworking Overseas**

A 16-page brochure analyzes expansion plans of metalworking plants in 46 countries outside the United States. Surveys are included of production equipment owned, planned equipment purchases from the U. S., 1963 prediction, and annual purchases of raw materials and maintenance supplies. (Industrial World)

For free copy circle No. 34 on postcard

# **Cleaning Barrels**

The standard line of Rotoblast cleaning barrels from 1½- to 18-cu ft capacity is described in a catalog. Case histories are included showing savings that have come with this abrasive cleaning process. (Pangborn Corp.)

For free copy circle No. 35 on postcard

# Forged HSS Tools

News about forged high-speedsteel tools comes in a four page bulletin. Advantages of forged tools are outlined, including longer life and extra production. Drawings and specifications are presented on a standard line, and requests for quotations on special tools are invited. (Aircraft Forged Tool Co. Inc.)

For free copy circle No. 36 on postcard

# **Machining Gray Iron**

All aspects concerning the machinability of a line of permanent-mold gray-iron castings are discussed in a 12-page report. Information covers speeds, feeds, rake angles, carbide grades, and cost data. (Eaton Manufacturing Co.)

For free copy circle No. 37 on postcard

The Co

Mil in

3" and

qui em

High

vei

Hig

Co

Pos

mn

Ext

Lov

INNO

# Strip Width Gage

A new non-contact radiationoperated gage measures and records the width of hot strip traveling at up to 2000 fpm. It brings economies in edge trim and suits today's higher rolling speeds. It's described in a booklet. (Daystrom, Inc.)

For free copy circle No. 38 on postcard

#### **Machine Tools**

An expanded line of metalworking tools includes new rod cutters and universal bending brakes. It is covered in a revised catalog. (Whitney Metal Tool Co.)

For free copy circle No. 39 on postcard

#### Fork Trucks

A bulletin describes and illustrates a line of lift trucks. Included are rider-type electric- and gasoline-powered fork trucks; a side-loading model, either gas, electric, LP, or diesel operated; electric platform trucks; and electric crane trucks. (Baker Industrial Trucks)

For free copy circle No. 40 on postcard

# **Thread Miller**

A lathe thread miller reduces production time and provides closer tolerances, even on difficult materials. It mills from 4 to 200 threads per in., cuts multiple threads, and mills 60° Acme and square threads. An attachment for 9- to 20-in. engine lathes, it is described in a product bulletin. (Fen-Thread-Machine Co., Inc.)

For free copy circle No. 41 on postcard

THE IRON AGE, December 17, 1959

INNOCENTI

NE

LO

# INNOCENTI

mechanical division

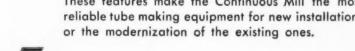
# nuous

for the manufacture of seamless steel tubes and pipes

The Continuous Mill associated with the Stretch Reducing Mil in the double version for making tubes from 3/8" to 3" and from 2.3/8" to 7" successfully meets present requi ements for consistently higher quality and quantity.

- Highest Capacity: the annual production can reach respectively 150,000 and 250,000 tons in the two versions.
- Highest yield: 93% from billet to tube
- Complete automation: 1,5 man hour per produced ton
- Possibility to make tubes up to 18 mm with 2,25 mm minimum thickness without stretching
- Extremely easy to operate
- Low installation costs in respect of capacity.

These features make the Continuous Mill the most reliable tube making equipment for new installations or the modernization of the existing ones.





are

Co.

na-

ntdis-

orake

cost

on-

and

trip It

and

eds.

ay-

d

ork-

ters It

log. rd

lusded

ineding , or orm cks. rd

uces ides icult 200 tiple and for

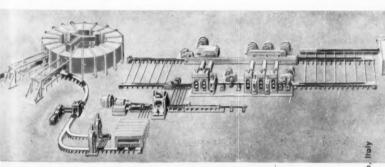
t is

etin. (.:

1959

rd

à



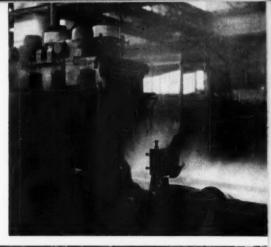
Head Office, offices and factory

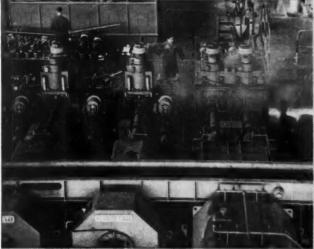
Via Parigi, 11 - tel. 487-051

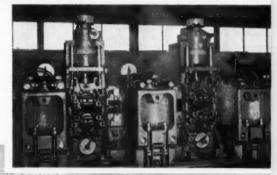
NEW YORK INNOCENTI CORPORATION 43 West 61 Street N. Y. 23 - tel. Columbus 5-7795

INNOCENTI 6. Av. F. Roosevett - VIII tél. Balzac 03-51 LONDON INNOCENTI U.K. Representative

INNOCENTI Edif. Sudameris Avanida Urdaneta y Fuerzas Armadas - tel. 545-461













Costa Costa

operation orks in Cos

in oper.

S.p.A. W

Continuou

Uganda House 88/59 Trafalgar Square, W.C. 2 tel. Whitehall. 2075 CARACAS



# technology determines your engineering sales . . .

Let's not emphasize the size of the \$140 billion metalworking market. Rather, let's think about *your* product. Let's remember that its inherent purpose — *its engineering* advantages and applications — is most often its basic appeal to metalworking. So isn't it obvious that technical management (technology) must pass upon these engineering features somewhere early in the buying process?

This technical management is often a hidden buying influence that your salesmen can't reach. In metalworking, it may be president or plant manager, metallurgist or materials engineer. We call these people "metals engi-

neers", the men who care what happens to metals. They are constantly involved, regardless of title, with the engineering aspects of metalworking. They depend upon Metal Progress, the monthly engineering magazine of their society, the American Society for Metals.

ger me pct

pai

fro

feat

gro

life. the bols

THE

These 30,000 problem-solvers, members of ASM and readers of Metal Progress, deal in fundamentals, however complicated. Will it work or won't it?...how well? That's why the advertising pages of Metal Progress are fundamentally important to you for a *complete* advertising approach to the metalworking market.

# Metal Progress

Published by The American Society for Metals

when in Cleveland, visit our new headquarters . . .



# New Materials and Components

#### Add-Subtract Units for Process Control

Add-subtract process controllers can serve a wide range of industrial bi-directional measurement and control uses. They provide direct numerical display of the measurement, and actuate various control functions in production when a preset number (or series of numbers)

is reached. Applications include positioning, measuring, cutting to length, coil winding, tachometry—any use where preset measurements of precise quantities are used for control. The unit "zeros" upon "firing." (Dynapar Corp.)

For more data circle No. 42 on postcard, p. 181

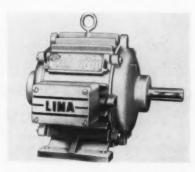


## Rugged Motor Line for Continuous Fan Duty

Coming in NEMA frames 182 through 326U (½ through 50 hp), a new line of motors is designed for continuous fan duty. The fan draws air over the finned frame to cool and clean the motor. Diecast rotors are dynamically balanced, and double-width ball bearings are prelubricated for life. The rotor-

stator air gap is checked for uniformity. These motors can mount on floor, wall, or ceiling, and the connector box can be rotated accordingly. They come as 2- or 3-phase, in all standard frequencies and voltages below 600 v. (Lima Electric Motor Co.)

For more data circle No. 43 on postcard, p. 181



# **Epoxy Adhesive Bonds Metal to Metal, Plastic**

Widespread applicability is foreseen for a new epoxy adhesive in general-purpose metal-to-metal and metal-to-plastics bonding. A 100pct-solids, unfilled, modified twopart formulation, it is available at from ½ to ⅓ the cost of similar products. Time and labor savings

1ev

gi-

of

adver

at's

ing

AL BOO

result from the fact that, compared with solvent-dispersed adhesives, it can be applied to only one of the surfaces being bonded. It cures well at room temperature, faster with moderate heat. (Rubber & Asbestos Corp.)

For more data circle No. 44 on postcard, p. 181

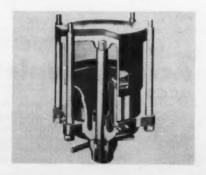


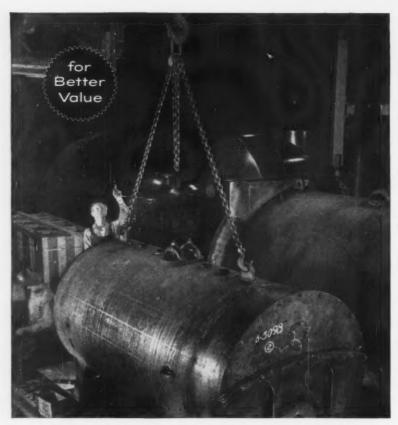
# Pneumatic Die Cushions Built for Long Life

Coming in nine different sizes, improved pneumatic die cushions feature an oversize hardened and ground piston stem to compensate for a minimum off-center loading of the pin pad. This insures long life. The unit can be installed on the average punch press by either bolster-plate or press-bed mount-

ing. It comes complete with all necessary fittings, including combination reducing regulating valve and pressure gage, which can be adapted to practically any power press. Ring holding pressures run from ½ to 20 tons. Welded-steel construction is used. (Dayton Rogers Mfg. Co.)

For more data circle No. 45 on postcard, p. 181





# Amazing one-day service with new Accoloy Kuplex Slings

• The man to see for really speedy service on your sling chain orders is your nearby Authorized Kuplex distributor. Within 24 hours, he can supply you with accolor Kuplex Sling Chains assembled locally from matched components which have been designed and manufactured for use with all other Kuplex parts. Matched Kuplex components are made to accolor Registered specifications from heat-treated accolor steel, and are factory proof-tested at twice working load limits to assure their

• The man to see for really speedy vice on your sling chain orders is your rby Authorized kuplex distributor. Test issued by ACCO and signed by the distributor who assembles and sells you complete kuplex sling chain assembled locally from matched comsenses.

If it's factory-built slings you desire, he can also supply you with ACCO Registered Sling Chains.

Write our York, Pa., office for the name of the Authorized KUPLEX Sling Chain Distributor nearest to you.



• A nearby Authorized ACCOLOY KUPLEX Sling Distributor can furnish promptly from his stock the exact sling chains for your specific requirements; made up from above components. Six chain sizes (¾" through ¾") are available in single, 2-leg, 3-leg or 4-leg styles.

# **Accoloy Kuplex Sling Chains**

American Chain Division \* American Chain & Cable Company, Inc.
Bridgeport, Conn. \* Factories: \*York and \*Braddock, Pa.
Sales Offices: \*Atlanta, Boston, \*Chicago, \*Denver, Detroit, \*Houston
\*Los Angeles, New York, Philadelphia, Pittsburgh, \*Portland, Ore., \*San Francisco
\*Indicates Workhouse Stocks

#### DESIGN DIGEST

# **Copper Blind Rivets**

A line of blind rivets now includes rivets made with a steel mandrel plated with copper. Among their applications will be copper assemblies. They come in one size only—1/8-in. diam with a grip range from 0.020 to 0.125 in. They can be inserted with either rivet pliers or pneumatic guns of the same make. ("Pop" Rivet Div., United Shoe Machinery Corp.)

Fer more data circle No. 46 on postcard, p. 181

# **Self-Aligning Bearings**

Low coefficient of friction without lubrication is the chief feature of a new line of self-aligning spherical bearings. Instead, a surface coating of Teflon is used on the outer raceway. Tough and strong, it suits these bearings to low surface speeds, high unit loads, or applications subject to high dynamic loading where



metal-to-metal life is limited by fretting or brinelling. Field tests indicate a life for these bearings of 10 times that of conventional bronze or steel on steel bearings. They incorporate the usual self-alignment and provide full capacity at all degrees of misalignment. (Radial Bearing Corp.)

For more data circle No. 47 on postcard, p. 181

# High-Vacuum Solenoid

Designed for use wherever a quick-acting automatic device is needed, a new high-vacuum solenoid valve offers complete freedom from leakage and high flow conductance. It can serve in automatic vacuum systems, as a safety device,

THE IRON AGE. December 17, 1959

0.5 The flar OD con

no

of self

nati inef ally thre

mot and full now tion:

signe cond sive

temp and mosp

THE

and as a remote-control valve. It is normally closed, rated at 115 v ac, 0.5 amp, inrush current 3 amp. There are two types of companion flanges—one for brazing to ¾-in.-OD lines, the other for ½-in. pipe connections. (Veeco Vacuum Corp.)
For more data circle No. 48 on postcard, p. 181

## **Self-Aligning Nut**

Space and weight savings at increased strength levels are only part of the advantages offered by a new self-aligning, 6-point nut-washer combination. It can accommodate



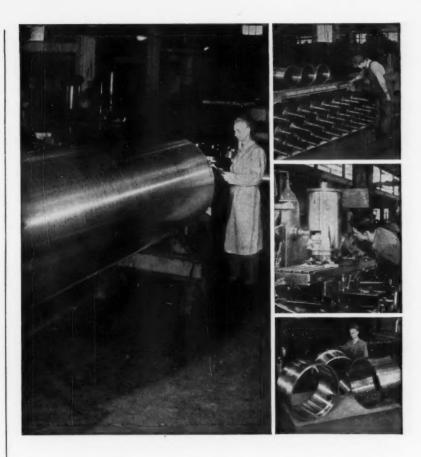
surfaces with up to 8° slope, eliminating time-consuming, structurally inefficient spotfacing. It is specifically designed for 160,000-psi short-thread bolts. (Kaynar Mfg. Co.)
For more data circle No. 49 on postcard, p. 181

# **Drip-Proof Motors**

A new development in drip-proof motors extends their application and usefulness. Such motors with full overload characteristics can now be used in demanding applications. A new line is specifically de-



signed to operate under adverse conditions of continuous and excessive moisture, high humidity and temperature, salt spray, dust, oil, and chemically contaminated atmospheres that previously required



You'll find them better for pressure if they're

# **SHENANGO CENTRIFUGAL CASTINGS**

WHATEVER the inside or outside pressures, Shenango centrifugal castings are better able to withstand them without failure.

Parts cast by the Shenango centrifugal process are much tougher because their finer, pressure-dense grain avoids stress concentrations while providing greater strength, better elongation and freedom from such costly defects as sand inclusions, blowholes and such.

Whether you need rings, rolls, sleeves, liners, bushings, bearings, mandrels or any annular or symmetrical part . . . ferrous or non-ferrous . . . in whatever shape, size or dimension to meet your requirements . . . Shenango can do the job. And do the job better!

For informative bulletins on the answers to your tough problems, it will pay you to write now to: Centrifugally Cast Products Division, The Shenango Furnace Company, Dover, O.



#### DESIGN DIGEST

totally enclosed fan-cooled protection. Multiple application and controlled processing of a special silicone sealing compound provide insulation which is thin and nonporous, yet permanently resilient and flexible. Other features include herringbone rotor for quiet operation, sealed bearings, and anti-corrosion coating on rotor and fan. These features permit lower cost, better heat transfer, cooler running, longer life, and minimum maintenance. The motors come in all ratings from ½ to 50 hp, any phase, frequency, or voltage, and torque or slip characteristics, with multispeed winding. (Sterling Electric Motors)

For more data circle No. 50 on postcard, p. 181

## Soldering Flux

Advantages of a new type of organic-acid-based soldering flux are non-corrosive residue after soldering, non-corrosive fumes, highly detergent cleaning action, and safety in preparation and use. Acid burns from flux are almost eliminated with this product. (Blackstone Corp.) For more data circle No. 51 on postcard, p. 181

## **Turbine-Type Pumps**

A new shell housing design is featured in a line of two-stage turbine-type pumps. It directs fluid between stages in a 180° crossover, thus placing resultant forces in opposition and achieving a condition of balanced radial loads and eliminating shaft deflection. Capacity is easily adjusted, and right- or left-hand operation is easily achieved without special parts. Capacities range up to 150 gpm, and pressures to 300 psi. (Aurora Pump Div., The New York Air Brake Co.)

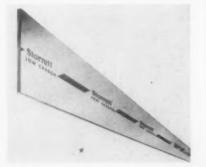
For more data circle No. 52 on postcard, p. 181

# **Smothers Vapors**

Put in tiny amounts in any sulphuric-acid anodizing bath, an additive smothers and virtually eliminates noxious vapors. Also, racks and the anodized work are made more easily rinsable and cleanable, in less time. (Colonial Alloys Co.) For more data circle No. 53 on postcard, p. 181

# Low-Carbon Flat Stock

Offering the economy of a lowcarbon steel, a new low-carbon precision-ground flat stock has exceptionally high machinability for lower machining costs, easier and



hav

moi

faci

The

get

cut

ven

ing

faster production, better finish, and longer cutting-tool life. It is ground to the same tolerances as the manufacturer's ground tool-steel flat stock. Ends are machined square, and thickness is accurate to 0.001



## **GOLD STAR SR**

This d-c rectifier type welder does more things better than any other welder of its class because —

- a. Its new transformer (Miller designed and built) has integral flux diverter.
- Its new weld stabilized circuit delivers the ultimate in speed of metal deposition.
- c. Its new completely sealed semi-metallic rectifier — designed for welding — provides the most efficient d-c for welding ever devised.

These features contribute to the Gold Star SR's greater arc stability, denser welds, easy arc starting and flexibility to handle <u>all</u> electrodes in all positions.

Performance-proved wherever profits are important, the Gold Star SR is available in single and duplex models of 200 to 1200 amperes at 60% duty cycle ratings.











# GOLD STAR All-Weather SRH

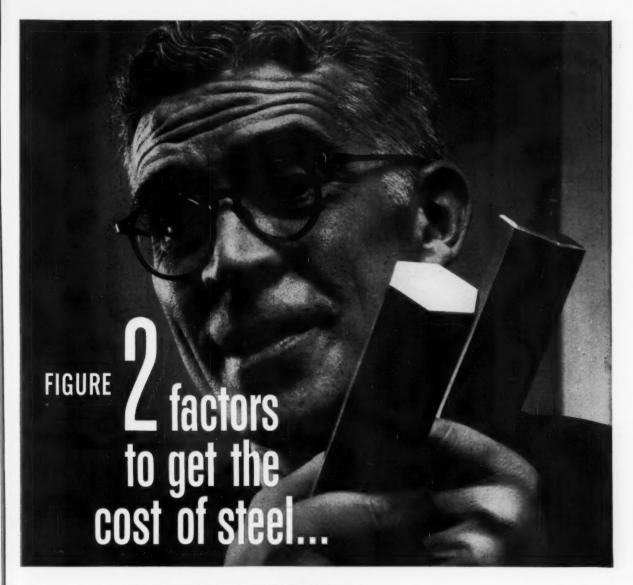
The features that set the SR above and beyond the normal standards of welder performance belong to the SRH also. But, in addition to the horizontal design for easier stacking and paralleling, this welder has an "all-weather" construction that includes baked varnish coated transformers and rectifiers plus phosphatizing and painting of all base and sheet metal — even fan blades. Cam-Lok receptacles are standard equipment. The Gold Star SRH welds real well.



Complete specifications on these Gold Star models will be sent promptly.

emiller ELECTRIC MANUFACTURING COMPANY, INC., APPLETON, WISCONSIN

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal



# Price and the COST OF POSSESSION!

If you don't figure the two, you won't have a true picture of your steel costs.

Many smart, informed steel users save money by drawing on the inventory and facilities of their Steel Service Centers. They get technical assistance. And they get steel when they want it, delivered, cut-to-size, ready for production.

This means less capital tied up in inventory. It saves costs of space. Operating costs for storing, handling, cutting

are reduced. Tax and insurance costs are kept to a minimum.

Compare all your costs of inventoried steel with the cost of steel delivered as needed. Use the chart at the right. For more information, get the booklet, What's Your Real Cost of Possession for Steel? from your nearby Steel Service Center. Or write to American Steel Warehouse Association, Inc., 540-D Terminal Tower, Cleveland 13, Ohio.



The American Steel Warehouse

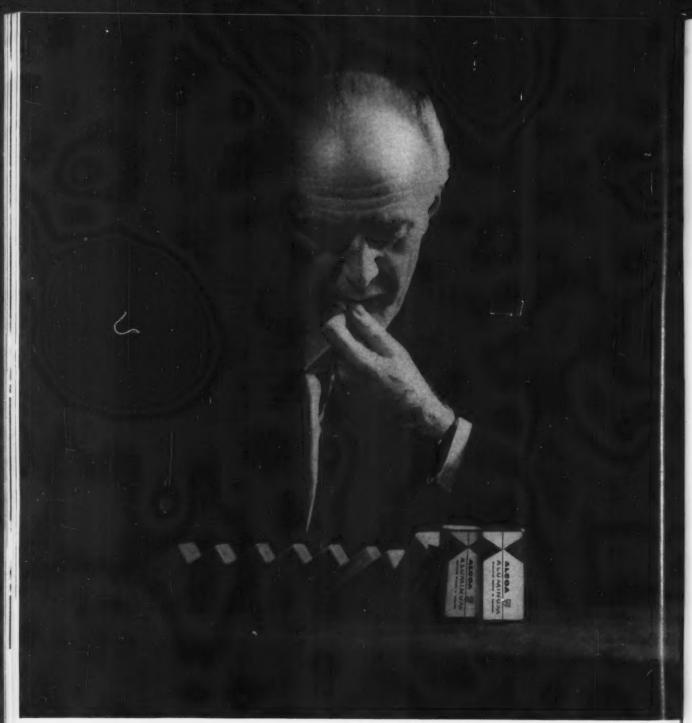
...YOUR STEEL SERVICE CENTER

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

FOR STEEL IN YOUR INVENTO	RY
Per ton delivered	_
Cost of capital:	
Inventory	
Space	
Equipment	
Cost of operation:	
Space	
Materials handling	
Cutting & burning	
Scrap & wastage	
Other costs:	
Obsolescence	
Insurance	
Taxes	
Accounting	
TOTAL	

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered



Photograph by Bruce Davidson

THI

# EIGHT DOWN AND TWO TO GO FOR B.B. RANDOLPH

When B. B. Randolph began building recognition for the Alcoa label, you had never seen it before. But by harnessing the power of advertising at the staggering rate of 8,000,000,000 impressions annually, he has made it familiar to eight out of every ten of your customers. Now he's working on the other two.

Today, consumers say the Alcoa

label's influence on their purchases is almost five times greater than in 1956. Retailers count so heavily on its help in selling that they have sent back whole orders shipped without it. Facts like these have prompted 1,661 manufacturers to affix the Alcoa label to more than 8,000,000 items this year.

Because Alcoa has people like B. B.

Randolph who help you with sales support unmatched anywhere else, you get extra value in every pound of Alcoa® Aluminum you buy. You can start this added value coming your way and increasing sales by calling your local Alcoa sales office. Aluminum Company of America, 2018-M Alcoa Building, Pittsburgh 19, Pennsylvania.





# Alcoa has hundreds of B.B.Randolphs to help you design it, make it, sell it

All of Alcoa's skills are mobilized to a single purpose: To put more than just 16 ounces of metal in every pound of Alcoa Aluminum you buy. Here are 12 of the dozens of ways to do it:

- Research Leadership, bringing you the very latest in aluminum alloys and applications.
- 2. Product Development by specialists in your industry and your markets.
- Process Development Labs for aid in finishing, joining and fabricating.
- Service Inspectors to help solve production problems at your plant.
- 5. Quality Control to meet top standards or match your special needs.
- Complete Line including all commercial forms, alloys, gages, tempers.
- 7. Availability via the nation's best stocked aluminum distributors.
- 8. Foremost Library of films and books to help you do more with aluminum.
- 9. Trained Salesmen with a wealth of on-the-spot information.
- 10. Sales Administrators constantly on call to service your orders.
- 11. Year-Round Promotions expanding your old markets, building new ones.
- 12. The Alcoa Label, leading symbol of quality aluminum, to mark your goods.

# Added Values With Alcoa Aluminum

Davidson

s sup-

vou get

Alcoa®

rt this

nd in-

Alcoa

my of

Pitts-



. . . is a case book of Alcoa special services and a guide to their availability in design, manufacture and sales. Your copy, with some of the most rewarding information you may ever read, is waiting and it's FREE. Write: Aluminum Company of America, 2018-M Alcoa Bldg., Pittsburgh 19, Pa.

#### DESIGN DIGEST

in. It comes in 24-in. lengths in widths from 3% to 16 in., in thicknesses from 1/16 to 2% in. It can be used unhardened, or can be carburized or case-hardened with tensile strength, yield point, and Brinell harness substantially higher than other low-carbon steels. (The L.S. Starrett Co.)

For more data circle No. 54 on postcard, p. 181

# **Hydraulic Filter**

For thorough protection of hydraulic machinery and oil recirculating equipment, a new in-line hydraulic filter is applicable on either the pressure or the suction side of the pump. This makes the filter element more readily accessible for cleaning or replacement and does



away with the need for disassembly, or draining the sump tank. Also, original piping and maintenance are extremely simplified. For further convenience and flexibility, it has three ports, two "in" and one "out." Maximum operating pressure is 150 psig. (Arrow Tools, Inc.)

For more data circle No. 55 on postcard, p. 181

#### **Motor Reducers**

Motor reducers of a new series offer users the convenience of gearmotor "package drive" design for lower speeds in the high-hp range. They are rated for output speeds from 520 to 1 rpm, 75 to 1 hp, and supplied with 1750-rpm NEMA rerated motors. (The Falk Corp.)

For more data circle No. 56 on postcard, p. 181



# CUT RIVET ASSEMBLY COSTS



# with Milford's Complete Line of AUTOMATIC RIVETERS



Can be adapted to solve nearly every fastening and assembly problem. For the answers to assembly problems... get in touch with Milford first!



MILFORD, CONNECTICUT . HATBORO, PENNA. ELYRIA, OHIO . AURORA, ILL. . NORWALK, CALIF.

# New Equipment and Machinery



# **Automatic Single-Spindle Drilling Machine**

This single-spindle vertical drilling machine has automatic controls for a large variety of second-operation jobs on parts and materials of all types. It is also made as a tapping machine and external threading machine. Capacity in mild steel is 3/s in. for drilling, 3/s in. for tapping, and 3/2 in. for external threading. Spindle speeds range from 500 to 10,000 rpm, with hydraulic feed

adjustable for breakthrough or controlled-feed operations in any portion of the stroke. Top dwell allows time for manual loading or positioning. Bottom dwell permits fine finishing and holds depth to 5-tenths. Cycles range to 500 strokes per minute. The unit can operate on normal shop air pressure. Spindle unit can be set at any height. (Universal-Automatic Corp.)

For free copy circle No. 57 on postcard, p. 181



# **Program Four Motions on Drilling Machine**

Four motions can be programmed on this numerically controlled drilling machine—column in-out, updown, hole depth, and rotary part positioning. It drills and taps cylindrical parts with diam up to 36 in, and height up to 72 in., conical sections, and curves not over 15° off horizontal center. Holes can be located accurate to ±0.003 in., repeatable to ±0.0005 in. The machine will do combination drilling and countersinking, combination drilling and counterboring, straight

drilling, reaming, counterboring, countersinking, and tapping. Control is by punched tape, and controls on the machine also supply instructions to machine and operator. Lights show when to change tools, and machine will not function unless the right tools are in place. Special devices control hole depth, rapid approach, and coolant selection. Lubrication is automatic for ways, spray mist for the head. (Barnes Drill Co.)

For free copy circle No. 58 on postcard, p. 181

Ste

Ye

U.

nee

por



# Rugged Mill Has Advantages of Three Types

Rigidity of a bed-type, convenience of knee-and-column type, and capacity of a rise-and-fall-type are combined in a general-purpose milling machine. Vertical motion is confined to the spindle carrier, with its vibration-damping overarm. Saddle and table mount directly on the bed, on square-gibbed ways, providing a rugged base for heavy cuts and large workpieces. It comes in

four models from 20 to 30 hp, with 72- to 80-in. table travel, 12-in. saddle travel, and 20-in. vertical travel. There are a front and a side set of controls, operating 32 feeds and 24 speeds. The machine can handle reciprocating, box-milling, and climb cuts with ease. A backlash eliminator prevents chatter and insures smooth cuts. (Cincinnati Milling Machine Co.)

For free copy circle No. 59 on postcard, p. 181



# How to stay alive working next to live steam

Steam—indispensable workhorse in an industrial plant. But if it breaks loose, steam may cause death on contact. Yet this man works with complete security—literally within an inch of his life—because he's working next to the hose that steam cannot burst: wire-braided U.S. Matchless® Steam.

This hose gives ample notice when replacement is needed. Even after long, hard service (and with 200 pound steam pressure) the safety-sure wire-braid construction of U.S. Matchless prevents it from bursting.

Instead, just a wisp of steam is allowed to seep through. This acts as a safety device, telling you that replacement is needed. That's why plant safety councils all over the country find no match for U. S. Matchless.

Despite its great ruggedness, this hose is flexible, lightweight, easy to handle.

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.



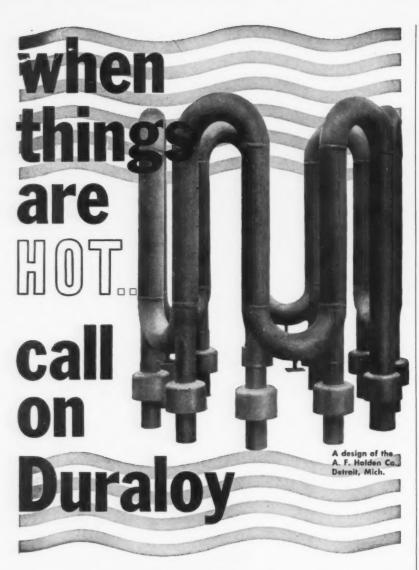
**Mechanical Goods Division** 

# **United States Rubber**

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Company, Ltd.



# Castings that Keep their Load-Carrying Strength at High Temperatures

This "immersion type radiant heater" is typical of the high reliability castings turned out by DURALOY. Centrifugally cast tubes with *UNIFORM* wall thickness...for longest service life. Static cast collars and shell molded bends...typical of DURALOY versatility.

For your high alloy casting requirements check with DURALOY... our long experience, ultra-modern foundry and up-to-the-minute test equipment will be helpful in solving your problems.

For more information ask for Bulletin No. 3150 G.



# **NEW EQUIPMENT**

# Liquid-OxygenManifold

A new manifold handles four liquid-oxygen cylinders of the same make to provide uninterrupted flow of 12,000 cu ft of oxygen. This setup occupies only a fraction of the space that would be required for an equal high-pressure cylinder supply. (Linde Co.)

For more data circle No. 60 on postcard, p. 181

#### Surface Grinder

The newly redesigned Hammond No. 2 surface grinder is a high-precision hand-feed toolroom machine, developed for fine grinding where accuracy and finish are all-important. High accuracy comes from a double-dovetail design of the spindle carrier, with adjustable gibs. The spindle is direct-driven



on precision preloaded ball bearings. Vertical spindle adjustment is 10-34 in. Maximum wheel size is 7½ in. In-and-out table movement is 6½ in., and longitudinal travel is 18 in. A unique chain drive provides smooth table travel and does away with the grinding pattern often produced by an ordinary rack-and-pinion drive. (The Foote-Burt Co.) For more data circle No. 61 on postcard, p. 181

#### 15-in. Drill Press

A new line of 15-in. drill presses is designed to provide the ruggedness and guts of much heavier presses. The line includes 40 models with high or slow speed, single or multiple spindle, No. 2 Morse taper or 0-to-½-in. key chuck spindle,

and standard or production table. Press components can be obtained for constructing special equipment. The spindle rides on four oversized, preloaded, life-lubricated ball bearings. A multiple-spline "floating drive" means less vibration, smoother operation, and more



power at the spindle. Total speed range is from 470 to 4600 rpm, with four speeds in each model. A multi-speed attachment provides more speeds. Spindle travel is 4-5/16 in. The unit is remarkably low priced. (Walker-Turner Div., Rockwell Mfg. Co.)

For more data circle No. 62 on postcard, p. 181

#### Collet Chucks

A line of detachable, reusable collet chucks saves up to 50 pct on second-operation prototype or production lathe work. They hold well on shoulders as small as 0.015 in., hex or square stock, castings, forgings, or any shape that can be bored



or milled. They come in three standard size sets from 1½ to 4½ in., retaining all the accuracy, durability, and long life of conventional use-once-and-discard collets. They can be bored for special applications and stored for future use without loss of concentricity. They can also be used on milling ma-

d-

15

10

# Complete Range of Ready-Power Units Cuts Ton-Mile Costs for All Types of Electric Trucks



Walkies



Narrow Aisle Trucks



Fork Trucks



are easily installed on new or used

trucks. Return the coupon below

Gasoline, LP-Gas and
Diesel Electric Models
Power Trucks from
Walkies to Steel Handlers
Ready-Power offers a complete range of power units that increase work output and cut ton-mile costs for all makes and models of electric trucks. Ready-Power units generate electric power on demand. They assure full power at all times, for unlimited periods. Truck slowdown is eliminated. Ready-Power units





Die Handling Trucks

THE READY-POWER COMPANY 3822 Grand River Avenue Detroit 8. Michigan

Please send me Bulletin 99-A

Name\_\_\_\_

Company\_

Address

City\_\_\_\_

\_Zone\_\_State\_

# NEW EQUIPMENT

chines, grinders, boring machines, for polishing, turning, and threading. (Hornet Machine Products,

For more data circle No. 63 on postcard, p. 181

#### **Bench Micrometer**

For measuring small and delicate parts, a bench micrometer is designed as a super-precision measuring machine. It uses an extra-large barrel and thimble, a non-rotating



spindle, and a dial indicator. With 250 graduations, the thimble reads directly in tenths. With the thimble set to the nearest thousandth, the indicator furnishes direct readings to 20-millionths. There are 11 different types of measuring anvils, which may be interchanged without adjustment. It also serves as a comparator and can be set without standards. (Mahr Gage Co., Inc.) For more data circle No. 64 on postcard, p. 181

#### Push-Off Device

For forklift trucks, a push-off device with side shifter and multiple forks is designed for plants using a take-it-or-leave-it pallet system, whereby loads are handled and stored on pallets but shipped without pallets. Enabling palletless handling of loads and precise positioning in storage racks, it permits the load to be pushed off the forks directly onto racks or on trailer floors. Corrugated steel pallets for this system are also available. (Lewis-Shepard Products, Inc.)

For more data circle No. 65 on postcard, p. 181

#### Cutter, Tool Grinder

Ease of control permits a variety of cutter, tool, and general grinding operations on a new grinder. A universal cutter head is adjustable to swing from 8- to 12-in. diameters, and a large-diameter wheel spindle



is mounted on specially selected grease-packed preloaded bearings, requiring no attention. Sensitive control of crossfeed and table traverse are provided. Many attachments cover a wide range of operations. The table can swivel 8° either side of zero, and with center

# PLATE WEBB FABRICATING MACHINERY

Steelworkers DELIVERY 10 DAYS

ALL STEEL CONSTRUCTION

The Webb Corporation, in presenting the line of new WEBB STEELWORKERS, has designed versatile machines for either job-work or high production work. These units have been engineered to meet the particular need of shops having a variety of work, with a result that all-purpose machines are now available.

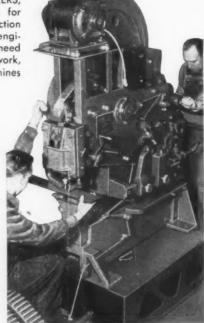
Five Complete Tools are Incorporated in a Single Unit.

- 1. Punch for plate, bars or structurals.
- 2. Cuts angles and tees with straight or miter cut.
- 3. Cuts off round and square bars.
- Shears plates and bars.
- 5. Coping or notching attachment. One of the main features of these machines is that they are at all times in complete readiness to do any of the

above operations and to do the work well. The punch may be operated at the same time as either the section cutter, har cutter, shear or the coping and notching attachment . . . therefore, two operators can work at this ma-

chine simultaneously without interfer-

ence. For illustrated literature and prices, write Dept. E.



Let Speed PAY-The WEBB









Also Manufacturers of INDUSTRIAL WEIGHING EQUIPMENT

Since 1881 WEBB CITY, MO., U.S. A locking can swivel 90° to the left and 45° to the right. The wheelhead has a vertical adjustment of 8 in. and a circular adjustment of 350°. Two wheel speeds of 3600 and 5000 rpm are furnished. (Micromatic Hone Corp.)

For more data circle No. 66 on postcard, p. 181

#### Screw Feeder

Usable with all makes of pneumatic and electric tools, an automatic screw feeder feeds and positions all types of screws. As the



screw is set under the driving blade, a precision collet holds it accurately and firmly in place. The outside of the collet is specially shaped to find the screw holes. (Wales-Strippit,

For more data circle No. 67 on postcard, p. 181

# Thread-Rolling Head

A new addition to a line of thread-rolling heads has a range from ½ to 7/16 in., UNC and UNF. It comes in stationary and revolving styles for applications on



turret lathes and hand and automatic screw machines. It can also be used on threading, drilling, and tapping machines. A set of interchangeable helix-angle bushings suffices to roll all threads within the head's range. Rolls never require regrinding. They are "selfleading," and no power feed is required. (Landis Machine Co.) For more data circle No. 68 on postcard, p. 181

## Plasma Flame Spray Gun

A plasma flame spray gun develops temperatures from 10,- to 15,000°F and will spray any mate-

rial that will melt without decomposing. It is a practical means of applying coatings of all high-melting-point materials. It operates on inexpensive gases such as nitrogen and hydrogen. Coating densities are easily controlled, and approach 98 pct of theoretical. Uses to date include the spraying of rocket nozzles, missile nose cones, and crucibles. (Metallizing Engineering Co., Inc.)

For more data circle No. 69 on postcard, p. 181



#### STANDARD EQUIPMENT

Air clutch. Air-release, spring-set brake. J.I.C. wiring and controls. Solenoid—controlled dual air valves. Adjustable gibs with bronze or composition faced ways on slide. Hard bronze crankshaft bearings. One-shot forced lubrication. Optional equipment as required.

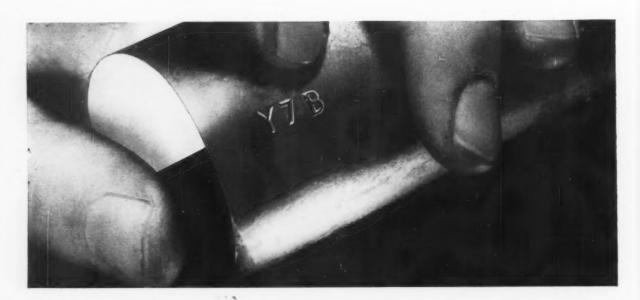
- Completely new design in geared and non-geared types incorporates proven construction features.
- Exceptional rigidity insures long die life and close product tolerances.
- Large box-type slide mounted in long gibs holds accurate alignment.
- 125 ton capacity covers wide variety of jobs.
- Big die capacity—bolster area 29" x 42"—shut height 18", or to suit.
- Versatile efficient dependable.



WRITE for complete information on this new press. Also, 14 to 150 ton O.B.I. presses, 20 to 150 ton straight side presses, 30 to 75 ton gap frame presses.

L&J PRESS CORPORATION 1623 STERLING AVE.

# As positive as a fingerprint— certified alloys from Ryerson



Alloys from different furnace heats can vary in hardenability and other working characteristics. But with Ryerson alloys you know the differences—before you start production. Ryerson alloys are marked with symbols identifying them with the particular heat from which they were rolled. As a Ryerson extra you get a dependable special report showing:

- Heat analysis. Not just the chemical range for the type of alloy, but the specific analysis
- of the heat from which your steel was rolled.
- Tested Hardenability. Not just the average hardenability for the alloy, but the actual Ryerson-tested hardenability for the particular heat... as quenched, and at three draw temperatures.

For more information about Ryerson alloys and the Ryerson Certified Alloy Steel plan, call your nearby Ryerson plant.



STEEL \* ALUMINUM \* PLASTICS \* METALWORKING MACHINERY
NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

# The Iron Age Summary

# Steelmakers Won't Be Pressured

McDonald's encirclement tactics have been successful. But steelmakers won't follow the pattern.

If an inflationary settlement is forced by government intervention, price hikes may result.

• The steel industry will not sign an inflationary contract with the United Steelworkers unless forced to by the Federal government.

Encirclement tactics of the union through settlements with other basic industries will have no effect on the deadlocked steel negotiations.

Almost Surrounded — First step of Steelworker President David J. McDonald's plan of massive encirclement was agreement with Kaiser Steel Corp. and other small steel companies. This was followed by contracts with copper producers and, last week, with the can manufacturers.

And settlement with the aluminum industry appears imminent. Price Hikes Possible — But if there is an enforced settlement that the steel industry considers inflationary, steel prices may advance. The can companies immediately raised their prices after settling (See p. 125) and the aluminum companies started to build their case for higher prices even while negotiations were going on.

At the same time, it appears that union efforts to get government intervention in the steel negotiations may not succeed. Ever since negotiations started last spring, the Steelworkers have hoped to get some branch of the government to intervene. The Washington climate has always been favorable to the union side in labor disputes.

Congress Confused — But Congress is confused on the issues. Many plans have been suggested, but they are not clear-cut and sentiment has not jelled behind any single proposal. Many Congressmen are vocal in demanding that "something be done," but a concrete plan is seldom suggested.

Because 1960 is an election year,

it is unlikely that Congress will pass any strong anti-labor legislation. But at the same time, there is no strong block of votes united against the steel industry.

Market Critical—In steel market developments, there is no easing in the supply picture. Virtually all products are sold out through the first half of 1960. Steel sheets and tinplate continue to be the most critical products.

This is underlined by concern of users of tinplate and sheet steel over the possibility of a short contract if and when the steel industry and union do sign.

The Possibilities—If a contract should extend only to mid-1961, users of these products will have to start stockpiling against a possible new strike before they have recovered from the last one.

But if the 80-day injunction now in effect expires without a settlement, it will precipitate an immediate crisis. Sharp and widespread cutbacks would follow at once. There is no steel supply cushion possible by that time.

# Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week 2,729	Last Week 2,732	Month Ago 2,208	Year Ago
(14e) ions, ood omined)	2,727	2,/32	2,200	2,011
Ingot Index				
(1947-1949=100)	169.9	170.1	137.5	125.2
Operating Rates				
Chicago	94.5	93.5*	68.0	86.0
Pittsburgh	96.0	96.0*	76.0	71.5
Philadelphia	102.0	103.0*	98.0	73.5
Valley	93.0	95.0*	75.0	57.5
West	93.5	94.5	80.0	84.0
Cleveland	98.5	95.5	77.0	75.0
Detroit	98.0	94.0	77.0	87.0
Buffalo	107.3	105.0	100.0	66.0
South Ohio River	99.0	101.5	89.0	82.0
South	86.5	86.5	60.0	67.0
Upper Ohio River	95.0	93.0*	87.5	87.0
St. Louis	97.5	105.0	90.0	90.5
Aggregate	96.5	96.5	78.0	74.5

#### Prices At a Glance

noted) This Week	Week Ago	Month Ago	Year Ago
6.196	6.196	6.196	6.196
\$66.41	\$66.41	\$66.41	\$66.41
\$41.17	\$42.50	\$46.17	\$39.83
\$27.50	\$28.17*	\$31.83	\$29.00
26.80	26.80	26.80	26.80
33.00	33.00	30-33	29.00
12.30	12.80	12.80	12.80
36.00	36.00	36.00	36.00
74.00	74.00	74.00	74.00
99.00	99.00	101.00	99.12
12.50	12.50	12.50	11.50
	This Week  6.196 \$66.41  \$41.17 \$27.50  26.80 33.00 12.30 36.00 74.00 99.00	This Week Ago  6.196 6.196 \$66.41 \$66.41  \$41.17 \$42.50 \$27.50 \$28.17*  26.80 26.80 33.00 33.00 12.30 12.30 12.80 36.00 36.00 74.00 74.00 99.00 99.00	This Week Month Week Ago Ago 6.196 6.196 6.196 6.196 6.196 6.41 \$66.41 \$66.41 \$41.17 \$42.50 \$46.17 \$27.50 \$28.17* \$31.83 26.80 26.80 33.00 33.00 30.33 12.30 12.80 12.80 36.00 74.00 74.00 74.00 99.00 101.00

# Savings Come With Teamwork

The 1959 awards of the Gray Iron Founders' Society show savings can come through good teamwork.

The winners of the top award worked together to save their firm thousands of dollars.

A review of the award winners of this year's Gray Iron Founders Society Design Award Contest is a showpiece of the savings possible in industry through cooperation between purchasing, engineering and castings suppliers.

This year's \$500 first place winners—purchasing agent Don Davis and design engineer J. T. Eccles of Rockford Machine Tool Co.—used a trick they picked up at a foundry clinic to save their firm almost \$3000 on a \$10,400 item.

Practical Thinking—An order had been received at Rockford for a planer, and its two columns were to be welded at a cost of \$10,400 for the pair. Shortly after, a duplicate order came in. Messrs. Davis and Eccles decided to look into the practicality of using sectional castings, especially since internal horizontal ribbing in 12 in. increments would be a tough inside welding job. Complete patterns with full length core boxes would cost \$19,750. But sectional core boxes would cost only \$7000 and were used for each repetitive section. They were also made reversible for both right and left hand columns.

The 16,900 lb castings cost \$5408 per pair and saved almost \$3000 on outright cost. In addition it was estimated to have taken only half as long to plane and hand

scrape the ways to rigid machine tool standards.

Attended Clinics—An interesting sidelight is that both Messrs. Eccles and Davis attended the GIFS regional design clinics which have been held across the country. This was not discovered until after all entries had been judged by an outside panel.

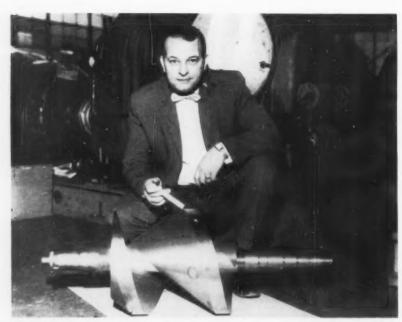
"This award clearly demonstrates that close cooperation between purchasing agents and design engineers can bring out about many savings of time, effort and money," says Don Workman, GIFS executive vice president in Cleveland. "In this case the purchasing agent and engineer wisely used two of the foundry industry's major virtues of freedom of design and multiple use of cores to accomplish their objective with outstanding success."

Single Casting Pays—Chief Design Engineer Joseph D. Walls spotted a possible saving for his company through use of a one-piece casting instead of a combination casting-forging. At his firm, Roots-Connersville Blower at Connersville, Ind., ductile iron rotors had been regularly pressed and keyed to forged steel shafts. The rotor hub was made oversize so a keyway could be put in for a positive key fit to the shaft.

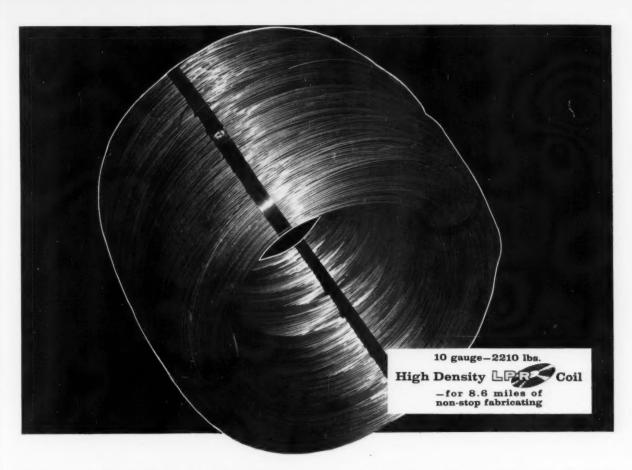
Material costs were cut, less machining was necessary and assembly time was reduced.

#### Correction

In the Nov. 26 issue, it was stated that two New Departure bearing plants would be closed for lack of steel. Closedowns were avoided and the plants at Bristol and Meriden, Conn., are operating.



**SECOND PLACE:** Joseph D. Walls, Roots Connersville Blower Div., Connersville, Ind., displays the integral-cast rotor and shaft for a compressor. The design won second place in the annual GIFS Design Award Contest.



# How DSC-Portsmouth Long Production Run Coils Help You Reduce Your Brite Wire Fabricating Costs



#### CONTINUOUS LENGTH BRIGHT WIRE COILS

LOW AND MEDIUM CARBON

.072"/.500" inc. (to about 4200 lbs.) .023"/.071" inc. (to about 1000 lbs.)

#### HIGH CARBON

.072"/.250" inc. (up to about 4200 lbs.)
.023"/.071" inc. (up to about 1000 lbs.)

COIL DIMENSIONS ON REQUEST LPR's (compared with 300 or 400 lb. traditional mill-weight bundles) cut down-time frequency for coil changes and setup adjustments from 50% to 92.8% and slash coil-end scrap loss proportionately.

Users report man-hour cost savings of 20% and more resulting from increased output per machine-hour and faster job-completions.

LPR's cost no more than the small coils. They widen your profit margins, strengthen your competitive position.

Possessing greater density and self-support, LPR's conserve storage space, cut unloading time from 15% to 50%, improve your all-around efficiency of inventory management and materials handling. Also eliminate the bother and expense of handling vendors' returnable carriers.

We'll document any of the foregoing statements for bona fide Brite Wire users.

For helpful hints on Brite Wire fabricating or reprints of "The Drawing and Handling of Long Production Run Wire Coils" by Uno V. Johnson, please write Detroit Steel Corporation, Box 4308, Detroit 9, Michigan



Happy Holidays and a Big New Year for All

Flat Rolled and Wire Products

COPYRIGHT DETROIT STEEL CORPORATION 1053

# Can Service Centers Rebuild Stocks?

Warehouse inventories, estimated at 800,000 tons, are at their lowest point in years.

There's not much hope they can be rebuilt until well into 1960.

■ The outlook is bleak for users of warehouse steel. Service center stocks are at their lowest point in years. In the next few months, warehouses will have little chance to build up inventories. And another steel industry shutdown in January would make matters worse.

Nation-wide, warehouse inventories are now estimated at 800,000 tons by the Steel Service Center Institute. This compares with the 3.7 million tons on hand when the steel strike began last July.

Buying Quotas Hurt — Much of the present supply is in sizes and grades that can't be used. There will be some inventory improvement this month and next—but not much.

Service centers should have about 900,000 tons of steel by the end of January, the Institute estimates. Mill quotas are hampering warehouses in getting steel. Right now, service centers are only receiving about 50 pct of their normal monthly tonnages.

Product Rundown—Usually, mill deliveries to warehouses take longer than to other steel buyers. The service centers faring best now are those who got mill orders in early this year.

Products in the poorest supply include sheet, carbon bar, shapes, and plate. There's little hope warehouses can rebuild stocks of these before the end of the second quarter.

Stocks of specialty products — tubing, cold-finished and alloy bar — may be balanced during the first quarter. About the only item now in good supply is tool steel. Deliveries of tool steel came in during the steel strike from producers still operating.

Sheet and Strip—Customers are pressuring mills for deliveries before the strike injunction expires. Mill shipments are moving out well, but users are still operating from hand to mouth. Some large-scale users—including automotive, appliance, and farm equipment makers—can't get enough steel to meet stepped-up production schedules.

Demand for hot-rolled, coldrolled, galvanized, and electrical sheets remains critical. At one **Mid**west mill, enameling iron and galvanized sheet are sold out through the first quarter. The mill won't book orders beyond that point. There is some open space on February books in some grades of electrical sheet.

# PURCHASING AGENT'S CHECKLIST

Canmakers settle with steelworkers union. Rise in can prices follows.
P. 125

New extruder turns out 120 aluminum cans a minute. P. 126

Steel shortages hurt auto production schedules. Now, with more steel available, automakers hope to regain ground.

P. 127

Plates and Shapes — New construction layoffs continue hitting the building industries because of steel shortages. Freight car builders, who closed down because they couldn't get needed steel, still haven't started up. Their inventories are not large enough to support production.

Some buyers are trying to locate foreign plates and structurals for second quarter delivery. They are having little success.

Domestic mills expect to have July, August, and September orders shipped by mid-February. But some orders won't move out until March. The reason: Defense-rated orders must be shipped first. At some mills, heat treating facilities are jammed with defense orders. Military setaside capacity was booked long ago. And some special priority orders are still coming in.

**Bar** — Mill shipments are rising after a slow start. But some producers won't get August tonnage out before January. Meanwhile, new orders keep coming in.

Cold-finished bar is just about sold out for the first half. Alloy bar is difficult to get. Some bar users are trading to get the right sizes and analyses. Others are accepting any bar analysis, regardless of price, just to keep production going.

Tinplate—Mill deliveries are increasing, but probably won't hit peak rates until next month. Canmakers hope to accumulate enough stock to carry them through the 1960 canning season. But there won't be any real inventory cushion available until a year from now.

Imported Steel—October was the eleventh month in a row in which steel imports exceeded exports, the U. S. Dept. of Commerce reports. October imports, at 362,000 tons, were slightly below the 366,000-ton level of September. Steel imports during the first ten months of the year were 3.4 million tons. This was double the amount imported last year. It's estimated that foreign-made steel accounted for about 25 pct of the total new supply of steel in the U. S. during the strike.

## COMPARISON OF PRICES

(Effective Dec. 15, 1959)

Steel prices on this page are the average of various f.o.b. quotations major producing areas: Pittsburgh, Chicago, Gary, Cleveland,

Youngstown.										
Price changes	from	previous	week	are	shown	by	BD	asterisk	(*).	

	Dec. 15	Dec. 8	Nov. 17	Dec. 16
	1959	1959	1959	1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10#	5.10∉	5.10¢	5.10∉
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.30	5.30	5.80	5.30
Plates, wrought iron	13.55	13.55	18.55	13.55
Stainl's C-R strip (No. 302)	52.00	82.00	<b>52.00</b>	52.00
Tin and Terneplate: (per base	box)			
Tinplate (1.50 lb.) cokes	\$10.65	\$10.65	\$10.65	\$10.65
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.35
Special coated mfg. ternes	9.90	9.90	9.90	9.90
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675€	5.675¢	5.675€
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bar	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.50
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.90
Wire: (per pound)				
Bright wire	8.00€	8.00€	8.00∉	8.00€
Rails: (per 100 lb.)				
Heavy rails	\$5.75	\$5.75	\$5.75	\$5.75
Light rails	6.725	6.725	6.725	6.725
Bemifinished Steel: (per net ton)				
Rerolling billets	\$80.00	\$80.00	\$80.00	\$80.00
Slabs, rerolling	80.00	80.00	80.00	80.00
Forging billets	99.50	99.50	99.50	99.50
Alloys, blooms, billets, slabs	119.00	119.00	119.00	119.00
Wire Rods and Skelp: (per pour				
Wire rods	6.40¢	6.40¢	6.40∉	6.40∉
Skelp	5.05	5.05	5.05	5.05
rinished Steel Composite: (per	pound)			
Base price	6.196€	6.196¢	6.196€	6.196€

rinished Steel Composite
Weighted index based on steel bars, shapes,
plates, wire, rails, black pipe, hot and cold
rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley
furnaces and foundry iron at Chicago, Philauelphas. Buffalo and Birmingham.

	Dec. 15 1959	Dec. 8 1959	Nov. 17 1959	Dec. 16 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila,	\$70.57	\$70.57	\$70.57	\$70.57
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.07
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley Ferromanganese, 74-76 pct Mn.	66.50	66.50	66.50	66.50
cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross t	ton)			
Pig iron	866.41	\$66.41	\$66.41	\$66.41
Scrap: (per gross ton)		0.10.00	045 50	\$42.50
No. 1 steel, Pittsburgh	\$41.50°	\$42.50	\$47.50	
No. 1 steel, Phila. area	41.50°	44.50	46.50	33.50
No. 1 steel, Chicago	40.50	40.50	44.50	43.50
No. 1 bundles, Detroit	40.50	40.50	44.50	35.50
Low phos., Youngstown	49.00*	49.50	51.50	44.50
No. 1 mach'y cast, Pittsburgh	55.50	55.50	55.50	50.50
No. 1 mach'y cast, Phila	54.50	54.50	54.50	48.50
No. 1 mach'y cast, Chicago	60.50	60.50	64.50	53.50
Steel Scrap Composite: (per gros	s ton)			
No. 1 hvy. melting scrap	847.17	\$42.50	\$46.17	
No. 2 bundles	27.50°	28.17**	31.83	29.00
Coke, Connellsville. (per net ton	at oven			
Furnace coke, prompt \$14.75	5-15.50 \$1	14.75-15.50	\$14.50-15	.50 14.50
Foundry coke, prompt	18.50	18.50	18.50	18-18.50
Nonferrous Metals: (cents per per			rsi	20.50
Copper, electrolytic, Conn		33.00	30-33	29,00
Copper, Lake, Conn		33.00	33.00	29.00
Tin, Straits, N. Y	99.00†	99.00	101.00	99.12
Zinc, East St. Louis	12.50	12.50	12.50	11.50
Lead, St. Louis	12.80*	12.80	12.80	12.80
Aluminum, virgin ingot		26.80	26.80	
Nickel, electrolytic		74.00	74.00	
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex	29.50	29.50	29.50	29.50

29.50

Steel Scrap Composites
Average of No. 1 heavy melting steel scrap
and No. 2 bundles delivered to consumers at
Pittsburgh, Philadelphia and Chicago.

#### INDEX TO PRICE PAGES

MIDEN TO TRIVE TAGES	
Prices At a Glance	199
Comparison of Prices	203
Bars	211
Billets, Blooms and Slabs	209
Boiler Tubes	213
Dolts, Nuts, Rivets, Screws	214
Clad Steel	213
Coke	213
Electrical Sheets	213
Electrodes	213
Electroplating Supplies	214
Iron Ore	213
Merchant Wire Products	213
Metal Powders	214
Mill Dandard	
Mill Products	208
Permitted Marie 203-206	
Remelted Metals	208
Scrap	208
Piling	209
Pig Iron	215
Pipe and Tubing	212
Plates	211
Rails	213
Ketractories	213
Service Center Prices	214
Shapes	209
Sheets	210
Spring Steel	213
Stainless	215
Steel Scrap	205
Steel Scrap	
Strip	209
Structurals	209
Tinplate	210
Tool Steel	213
Track Supplies	213
Water Pipe Index	214
Wire	211
Wire Rod	210

## NEW LOW-COST WAY TO RAISE OUTPUT



# Acme Visible Planning Panels make it easy to stay on top of your shop

Timing is the essence of high production at low cost. And Acme Visible Panels make it easy for you graphically to plan, schedule and follow through every job. Machine loading. Personnel assignment. Shipping. Data cards in pockets keep essential facts at your fingertips. Visible margins portray your scheduling and work progress at a glance. Send for full facts.

#### ACME VISIBLE

Acme Visible Records, Inc. 3812 West Allview Drive, Crozet, Va. Please send free booklet on production planning and control panels.

---------

COMPANY.

ADDRESS\_

CITY STATE\_

# Scrap Continues To Show Declines

Prices for selected grades of scrap dropped again this week in a number of districts.

But tonnages involved in new orders are small. It could be mills are just testing the market.

Prices were generally lower again this week in a number of markets, with a sharp break in key grades noted at Philadelphia. But there's a general feeling that the downtrend is nearing bottom.

In most instances, mill buys aren't very large. This has been interpreted as a move by the mills to sound out the market. At this time, at least,the trade says it will resist prices much lower than those currently being quoted. Distress scrap, however, continues to move freely.

Because of the coming holidays, few new orders are expected until after Jan. 1. Even then, large orders are a question mark. The uncertainty still surrounding the steel impasse could continue to dull the market.

Correction: The Composite for No. 2 bundles was incorrectly quoted as \$28.83 in the Dec. 10 issue. The correct price was \$28.17.

Pittsburgh—The market here has shown firmness after dropping to an apparent bottom. New firmness was shown when a local mill bought No. I heavy melting at \$42, No. 2 heavy melting at \$36, and No. 2 bundles at \$31 and \$31.50. The purchase met strong broker resistance and the quantity was relatively small. It indicated prices have reached the point of no return. At

current levels there are more buyers than sellers. Mills say they will resist higher prices, but there are reports of limited purchases at higher figures.

Chicago — Despite reduced mill offers, scrap movement continues slow. While there was speculation that prices might sink another \$1, this was not reflected in new sales to mills. Dealer resistance appears strong. Correction: In the Dec. 10 issue random length rails were misquoted at \$55 to \$57. The correct price was \$56 to \$57.

Philadelphia—Prices dropped \$1 to \$3 on selected grades as a local mill came into the market with a new order. However, tonnages were small and the general feeling is that this is little more than a token order to feel out the market. Two prices prevail for No. 2 heavy melting, causing a wide spread for this grade.

\*New York — This market continues slow, with little advance expected until after Jan. 1. Some export business and spot local orders are sustaining prices. Clean cast chemical borings are off \$2.

Detroit—Automobile production is rising rapidly. Assembly plants have generated more scrap so far this month than had been estimated for all of December — but scrap isn't moving. Some say orders will start flowing into dealer and broker offices as soon as the steel impasse is settled. Prices may soften a bit before then.

Cleveland — Market continues spotty with no big change in sight until the steel labor situation clears up. One Valley mill was swamped with scrap and held up shipments. Other steel tonnage is moving from selected dealer yards. A local foundry bought 2 ft cut structural at \$49, down \$2. High quality turnings are hard to locate.

St. Louis—An easier tone again prevails in the scrap steel market here. Trading is slow and mills aren't too anxious to buy. Cast grades are moving a little better.

Cincinnati — With good sized orders to ship against, dealers and brokers will close out with one of their better months of the year. No new orders are in prospect locally or up river. Foundry business is still spotty.

Birmingham—With the exception of shipment to two Birmingham electric furnaces, the scrap market in this district is almost at a standstill and appears very weak. Brokers are quoting lower prices, but dealers say they are not buying even at these prices. Openhearth and cast buyers are out of the market. The export market is also at a standstill.

**Buffalo** — Prices r e m a i n unchanged in an inactive and slightly weaker market. Dealers are filling earlier orders and expect no new business this month. Inventories are still high.

**Boston** — The market is very quiet, with little or no action taking place. Due to the inactivity and lack of support from export, steelmaking grades are off on appraisal.

West Coast — Most mills are marking time, taking limited tonnages. One major mill still refuses to accept anything but top grade scrap. Export is a big factor in stabilizing prices: Correction: In the Dec. 10 issue, three prices were misquoted for Los Angeles. Correct prices were: No. 1 heavy melting, \$41; No. 2 heavy melting, \$39; No. 1 dealer bundles, \$38.

Houston—The domestic market is still weak since the district mill hasn't re-entered the market since the steelworkers went back to work.

#### Pittsburgh

No. 1 hvy. melting\$41.00 to \$42.00	
No. 2 hvy. melting 35.00 to 36.00	
No. 1 dealer bundles 43.00 to 44.00	
No. 1 factory bundles 50.00 to 51.00	
No. 2 bundles 30.00 to 31.00	
No. 1 busheling 41.00 to 42.00	
Machine shop turn 25.00 to 26.00	
Shoveling turnings 30,00 to 31.00	
Cast iron borings 29,00 to 30,00	
Low phos. punch'gs plate. 52.00 to 53.00	
Heavy turnings 36.00 to 37.00	
No. 1 RR hvy. melting 49.00 to 50.00	
Scrap rails, random lgth 60.00 to 61.00	
Rails 2 ft and under 66.00 to 67.00	
RR specialties 57.00 to 58.00	
No. 1 machinery cast 55.00 to 56.00	
Cupola cast 51.00 to 52.00	
Heavy breakable cast 49.00 to 50.00	
Stainless	
18-8 bundles and solids. 235.00 to 240.00	
18-8 turnings	
430 bundles and solids 130.00 to 135.00	
410 turnings 60.00 to 65.00	

#### Chicago

No. 1 hvy. melting \$	40,00	to	\$41.00	
No. 2 hvy, melting	36,00	to	37.00	
No. 1 dealer bundles	40.00	to	41.00	
No. 1 factory bundles	45.00	to	46.00	
No. 2 bundles	26.00	to	27.00	
No. 1 busheling	40.00	10	41.00	
Machine shop turn	22.00			
Mixed bor, and turn	24.00			
Shoveling turnings	24.00			
Cast iron borings	24.00		25.00	
Low phos. forge crops	54.00	to	55.00	
Low phos. punch'gs plate,				
14 in. and heavier	51.00	10	52.00	
Low phos. 2 ft. and under.	49.00		50.00	
No. 1 RR hvy. melting	45.00			
Scrap rails, random lgth	56.00			
Rerolling rails	63.00			
Rails 2 ft. and under	62.00		63.00	
Angles and splice bars	54.00		55.00	
RR steel car axles	59.00	to	60.00	
RR couplers and knuckles	51.00			
No. 1 machinery cast	60,00	to	61.00	
Cupola cast	54.00		55.00	
Cast iron wheels	48,00	to	49.00	
Malleable	62,00	to	63.00	
Stove plate	50,00	to	51.00	
Steel car wheels	51.00	to	52.00	
Stainless				
18-8 bundles and solids. 2	20.00	to	225,00	
18-8 turnings1	20,00	to	125.00	
430 bundles and solids1	20.00	to	125.00	
430 turnings	60,00	to	65.00	

#### Philadelphia Area

No. 1 hvy. melting	41.00 to	\$42.00
No. 2 hvy. melting	35,00 to	
No. 1 dealer bundles	45.00 to	46.00
No. 2 bundles	25,00 to	26,00
No. 1 busheling	45,00 to	46.00
Machine shop turn	24,00 to	25.00
Mixed bor, short turn	23.00 to	24.00
Cast iron borings	22.00 to	23.00
Shoveling turnings	26.00 to	27.00
Clean cast, chem, borings,	28,00 to	29.00
Low phos. 5 ft and under	49.00 to	50.00
Low phos. 2 ft punch'gs	51.00 to	52.00
Elec. furnace bundles	48,00 to	49.00
Heavy turnings	34.00 to	35.00
RR specialties	50.00 to	51.00
Rails, 18 in. and under	67.00 to	68,00
Cupola cast	44.00 to	45.00
Heavy breakable cast	46.00 to	47.00
Cast iron car wheels	50.00 to	51.00
Malleable	67.00 to	68.00
No. 1 machinery cast	54.00 to	55.00

#### Cincinnati

Brokers buying prices per groe	s ton	on	cars:
No. 1 hvy. melting	36.00	to !	37.00
No. 2 hvy. melting	30.00	to	31.00
No. 1 dealer bundles	36.00	to	37.00
No. 2 bundles	25.00	to	26.00
Machine shop turn	20.00	to	21.00
	22.00	to	23.00
Cast iron borings	20.00	to	21.00
Low phos. 18 in. and under	48.00	to	49.00
Rails, random length	54.00	to	55.00
Rails, 18 in. and under	62.00	to	63.00
No. 1 cupola cast	49.00	to	50,00
Hvy. breakable cast	44.00	to	45.00
	59.00		60.00

#### Youngstown

No. 1 hvy. melting .		0		. 5	\$46.50	to	\$47.50
No. 2 hvy. melting		۰			39.00	to	40.00
No. 1 dealer bundle	8				46.50	to	47.50
No. 2 bundles					30.00	to	31.00
Machine shop turn.		ė			21.50	to	22.50
Shoveling turnings					26.50	to	27.50
Low phos plate					48 50	40	40 50

Iron and Steel Scrap
Going prices of iron and steel scrap as
obtained in the trade by THE IRON AGE
based on representative tonnages. All
prices are per gross ton delivered to
consumer unless otherwise noted.

#### Cleveland

No. 1 hvy. melting\$43.00 to	\$44.00
No. 2 hvy. melting 35.50 to	36.50
No. 1 dealer bundles 43.00 to	44.00
No. 1 factory bundles 45.50 to	46.50
No. 2 bundles 26,50 to	
No. 1 busheling 43.00 to	44.00
Machine shop turn, 18.00 to	19.00
Mixed bor, and turn 24,00 to	25.00
Shoveling turnings 24.00 to	
Cast iron borings 24.00 to	
Cut structural & plates, 2	
ft & under 48.00 to	49.00
Drop forge flashings 43.00 to	
Low phos. punch'gs plate. 44.00 to	
Foundry steel, 2 ft & under 43.00 to	
No. 1 RR hvy. melting 45.50 to	
Rails 2 ft and under 65.00 to	
Rails 18 in. and under 66.00 to	
Steel axle turnings 24.00 to	
Railroad cast 60.00 to	
No. 1 machinery cast 56.00 to	
Stove plate 51.00 to	
Malleable 67.00 to	
Stainless	, 00.00
18-8 bundles	920.00
10 0 turnings 100 00 to	110.00
18-8 turnings100.00 to 430 bundles120.00 to	195.00
450 Dunules	120.00

#### Ruffalo

Βυπαιο		
No. 1 hvy. melting	\$36,00 to	\$37.00
No. 2 hvy. melting	33.00.to	34.00
No. 1 busheling	38.00 to	39.00
No. 1 dealer bundles	43.00 to	44,00
No. 2 bundles	26.00 to	27.00
Machine shop turn	19,00 to	20.00
Mixed bor, and turn	20.00 to	21.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	20,00 to	21.00
Low phos. plate	44.00 to	45.00
Structurals and plate.		
2 ft and under	44.00 to	45.00
Scrap rails, random lgth	42.00 to	43.00
Rails 2 ft and under	52.00 to	53.00
No. 1 machinery cast	53.00 to	54,00
No 1 aunala cast	49 00 to	50.00

#### St. Louis

JI. Rould		
No. 1 hvy. melting	36.00 1	0 \$37.00
No. 2 hvy. melting	34.00 t	0 35.00
No. 1 dealer bundles	43.00 (	
No. 2 bundles	25.00 1	
Machine shop turn		
Shoveling turnings	21.50 t	0 22.50
Cast iron borings	24.001	
No. 1 RR hvy. melting	44.00 t	0 45.00
Rails, random lengths	52.00 1	o 53.00
Rails, 18 in. and under	57.00 (	o 58.00
Angles and splice bars	50.001	o 51.00
RR specialties	49,001	0 50.00
Cupola cast	51.00 (	o 52.00
Heavy breakable cast	45.00 1	0 46.00
Stove plate	43.50 t	0 44.50
Cast iron car wheels	48.50 t	0 49.50
Rerolling rails	62.00 1	0 63.00
Unstripped motor blocks	45.00 1	0 46.00

#### Birmingham

2			
No. 1 hvy. melting	36.00	to	
No. 2 hvy. melting	31.00	to	32.00
No. 1 dealer bundles	36.00	to	37.00
No. 2 bundles	24.00	to	25.00
No. 1 busheling	40.00	to	41.00
Machine shop turn	23.00	to	24.00
Shoveling turnings	25.00	to	26.00
Cast iron borings	14.00	to	15.00
Electric furnace bundles	40.00	to	41.00
Elec. furnace, 3 ft & under	38.00	to	39.00
Bar crops and plate	44.00	to	45.00
Structural and plate, 2 ft.	43.00	to	44.00
No. 1 RR hvy. melting	36.00	to	37.00
Scrap rails, random lgth	52.00	to	53.00
Rails, 18 in. and under	56.00	to	57.00
Angles and splice bars	49.00	to	50.00
Rerolling rails	61.00	to	62.00
No. 1 cupola cast	53.00	to	54.00
Stove plate	53.00	to	54.00
Cast iron car wheels	44.00	to	45.00
Unstripped motor blocks.	42.00	to	43.00

#### **New York**

Brokers buying prices per gross ton	on cars:
No. 1 hvy. melting\$34.00	to \$35.00
No. 2 hvy. melting 30.00	to 31.00
No. 2 dealer bundles 20.00	to 21.00
Machine shop turnings 10.00	to 11.00
Mixed bor, and turn 12.00	to 13.00
Shoveling turnings 15.00	
Clean cast, chem. borings, 23,00	
No. 1 machinery cast 39.00	to 40.00
Mixed yard cast 37.00	
Heavy breakable cast 37.00	to 38,00
Stainless	
18-8 prepared solids200.00	to 205,00
18-8 turnings 85.00	to 90,00
430 prepared solids 85.00	to 90,00
430 turnings 20.00	to 25,00

Detroit	
Brokers buying prices per gross ton	on cars:
No. 1 hvy. melting\$38.00	to \$39.00
No. 2 hvy. melting 24.00	
No. 1 dealer bundles 40.00	to 41.00
No. 2 bundles 21.00	
No. 1 bushelings 38.00	to 39.00
Drop forge flashings 38.00	to 39.00
Machine shop turn 17.00	to 18,00
Mixed bor, and turn 19,00	to 20.00
Shoveling turnings 19.00	to 20,00
Cast iron borings 23.00	to 24,00
Heavy breakable cast 41.00	to 42.00
Mixed cupola cast, 47,00	to 48,00
Automotive cast 53.00	to 54.00
Stainless	
18-8 bundles and solids, 205,00	to 210,00
10 0 taxen (novo 90.00	

18-8 turnings . . . . . . . 80.00 to 85.00 430 bundles and solids . . 100.00 to 105.00

DOSTOR	
Brokers buying prices per gro	ss ton on cars:
No. 1 hvy. melting	
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	
No. 2 bundles	16.00 to 17.00
No. 1 busheling	34.00 to 35.00
Machine shop turn	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Clean cast. chem. borings.	16.50 to 17.50
No. 1 machinery cast	41.00 to 42.00
Mixed cupola cast	
Heavy breakable cast	36.00 to 37.00

#### San Francisco

No. 1 hvy. melting								\$40,00
No. 2 hvy. melting				٠	,			36.00
No. 1 dealer bundles	į.		×		é			36.00
No. 2 bundles								
Machine shop turn.								
Cast iron borings								
No. 1 cupola cast	٠	٠		,	٠			47.00

#### Los Angeles

No. 1 hvy. melting	\$41.00
No. 2 hvy. melting	39,00
No. 1 dealer bundles	38.00
No. 2 bundles	20,00
Machine shop turn \$18.00	
Shoveling turnings 18.00	to 19.00
Cast iron borings 18.00	to 19.00
Elec. furn. 1 ft and under	
(foundry) 49.00	to 50.00
No. 1 cupola cast 47.00	to 48 00

#### Seattle

	hvy. melting					\$35.00
No. 2	hvy. melting		 			 33,00
	bundles					22.00
	cupola cast.					36.00
Mixed	yard cast		 			 36.00

#### Hamilton, Ont.

Brokers buying prices	1	PH	11		9	ros	s	te	m	on	cars
No. 1 hvy. melting										- 5	32.2
No. 2 hvy. melting											28.2
No. 1 dealer bundles	Š.		÷			*		*			32.2
No. 2 bundles								×			24.0
Mixed steel scrap .											24.2
Bush., new fact., p	re	91	0	d	١.						32.2
Bush., new fact., ui	11	D	re	1	3	d					26.2
Machine shop turn.											14.0
Short steel turn											17.0
Mixed bor, and turn											13.0
Cast scrap											

#### Houston

Brokers buying prices	per	gross	ton	on cars:
No. 1 hvy. melting				\$34.00
No. 2 hvy. melting				31.00
No. 2 bundles				20.00
Machine shop turn.				16.00
Shoveling turnings				20.00
Cut structural plate				
2 ft & under		84	8.00	to 49.00
Unstripped motor b	locks	8 3	9.50	to 40.50
Cupola cast		4	6.00	to 47.00
Heavy breakable ca	st	3	4.00	to 35.00

# Aluminum, Union Ready to Sign

Early this week aluminum negotiators and Steelworkers ironed out the final details.

But an aluminum price hike is likely to follow the settlement.

Barring something unforeseen, this is the week the new aluminum contracts can be signed.

The head of United Steelworkers, David J. McDonald, and the top executives of three of the four companies negotiating are in Chicago for the talks. Insiders say they came with the understanding that a settlement was within close reach.

Speculation at the beginning of the week involved: Terms of the contracts, and their effect on the aluminum industry and markets.

Pattern Indicated? — Other contracts negotiated by USW this year came in for a share of examination in search for a possible pattern: Kennecott Copper Co.—22.3¢ per hour for 20 months; Kaiser Steel Corp.—between 19.5¢ and 22.5¢ over 20 months; can companies—28.2¢ to 36¢, depending on interpretation for three years.

A spokesman for one of the major producers said early in the week that, basically, all of these settlements are about the same. The figures differ, he says, because of differences between the industries. He guesses the equivalent in aluminum would be about 20¢ over 20 months.

Best Pact—One reliable observer says that aluminum producers may get the most favorable contract negotiated with the Steelworkers this session. He says they have been laying the groundwork lately with such statements as, "You can't convert the Kaiser Steel settlement directly to aluminum because of some basic differences between the industries."

The immediate effect of the wage and fringe hikes on aluminum producers is hardly in doubt. As early as next week, and certainly right after the Christmas holidays, the price of primary aluminum will be raised.

About 1¢ per lb would just about cover the increased labor costs. But some observers, noting that the basic aluminum price is lower now than it was a few years ago, are guessing that producers might bump prices more than 1¢ per lb.

#### Aluminum Outlook

Year-end reports and forecasts are starting to come out. One of the first is the prediction for 1960 by the Aluminum & Magnesium Div., Business & Defense Services Administration.

Aluminum business in 1960 will be 10 to 15 pct better than in 1959, says the BDSA division. The main reason: An overall improvement in business and the economy, in which aluminum will share. But it goes further than that.

Automotive Factor—The BDSA division says auto output in 1960 is likely to be up about 22 pct. And it expects the average car to use 13 pct more aluminum.

Although not much of an increase is predicted for building and construction, another major aluminum market, more aluminum will be used in that field, says the Aluminum & Magnesium Div.

Overseas Trend — Business is booming overseas as well. It looks like West Germany will be an even better market for primary aluminum. The German-American Chamber of Commerce figures 150,000 long tons of aluminum were made in Germany in 1959, while consumption topped 250,000 tons. This trend is likely to continue.

## **Building Sheet**

Apparently longer runs on high speed presses are working out the way the Aluminum Co. of America had hoped. Early in October, it introduced a new building sheet to replace the large variety of sizes and types builders had been using. Alcoa said it would sell competitively with galvanized, generally considered a lower cost item.

Many aluminum people were skeptical. But an Alcoa spokesman said this week that it has been working out well. The company has been keeping runs to minimum of 100,000 lb, and is happy with the early returns.

Tin prices for the week: Dec. 9—99.75; Dec. 10—99.50; Dec. 11—99.25; Dec. 14—99.00; Dec. 15—99.00.\*

\* Estimate.

## **Primary Prices**

(cents per lb)	current price	last price	date of
Aluminum pig	24.78	24.00	8/1/56
Aluminum Ingot	26.80	26.10	8/1/58
Copper (E)	33.00	30-33	11/12/60
Copper (CS)	33.00	30.00	9/1/80
Copper (L)	33.00	31.50	11/6/5
Lead, St. L.	12.30	12 80	12 14 51
Lead, N. Y.	12,50	13.00	12/14/59
Magnesium Ingel	36.00	34.50	8 13/56
Magnesium pig	35.25	33.76	8 13/56
Nickel	74.00	84.50	12/6/8/
Titanium sponge	150-160	182-182	8/1/50
Zinc, E. St. L.	12.50	12.5-13	11/2/8
Zinc, N. Y.	13.00	13-13.6	11/2/86

ALUMINUM: 99% Inget COPPER: (E)

— electrolytic, (CS) — custom smelters,
electrolytic. (L) — lake. LEAD: common
grade. MAGNESIUM: 99.8% pig Velasco,
Tex. NICKEL: Port Colborne, Canada.
ZINC: prime western. TIN: See above;
Other primary prices, pg. 208.

Amorphous phosphate (Amchem Alodine). This a protective coating for aluminum and aluminum alloys.

# A REVIEW OF PHOSPHATE COATINGS Specified for the Protection of Metal Surfaces

By HUGH GEHMAN, Assistant Manager, Product Development Dept., AMCHEM PRODUCTS, INC.

Phosphate coatings are protective inorganic finishes that actually change the chemical nature of metal surfaces. The metal reacts with the applied phosphate solution to form a nonmetallic, crystalline coating which serves to:

- Improve paint adhesion
- Provide protection against corrosion
- · Increase lubricity of friction surfaces
- Facilitate mechanical deformation of metals
- . Decorate—in many instances

Satisfactory protection of steel, zinc and aluminum surfaces against corrosion, paint peeling and blistering,



Typical automotive spray installation.

and hard wear requires precision methods of chemical conversion coating.

#### **Types of Conversion Coatings**

There are seven classes of chemical conversion coatings commonly specified and used throughout industry today. They are as follows:

Zinc-iron phosphate (Amchem Granodine). This is the heaviest type of coating (gray in color) used for prepaint treatments on steel, iron and zinc surfaces. The process requires five or six operations: cleaning; rinsing; rust removal, if necessary; coating; rinsing; and a second rinse. Coating weight ranges from 100 to 600 mg per sq. ft.

Medium or large volume production of automobile bodies, appliances, projectiles and cabinets can be handled effectively.

The coating solution improves paint adhesion by forming a crystalline deposit over the metal surface. This deposit is rough, as revealed microscopically, and so offers an ideal gripping surface for paint particles.

Manganese-iron phosphate (Amchem Thermoil-Granodine). This is a heavy black coating used on friction surfaces to prevent galling, scoring and seizing of parts. Typical

metal parts treated are pistons, piston rings, gears, cylinder liners, cam-shafts, tappets and various small arms components.



Typical appliance treatment line.

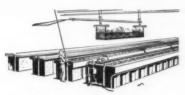
Iron phosphate (Amchem Duridine). This is a comparatively new process that places a light coating on surfaces for improved paint adhesion. Since cleaning and coating occur in the same bath, it has only three to five stages.

The iron phosphate treatment is a spray process suited for medium to large volume, large or small work. Precleaning is normally unnecessary, an economy factor in its favor.

Products protected by this process are steel or iron fabricated units, such as cabinets, washing machines and refrigerators. Weight of coating is 50 to 100 mg per sq. ft.

Zinc phosphate (Amchem Lithoform). This is a crystalline coating produced on galvanized iron and other zinc surfaces-also cadmiumfor improving paint adhesion. The purpose of the coating is to provide a paint-gripping surface and to prevent the reaction between acidic components of the paint and the zinc metal, with the formation of soaps and loss of paint adhesion.

This coating is applied in weights of 75 to 500 mg per sq. ft. There are no limitations on volume or production or on size of products treated. Zinc phosphate coating is used on zinc alloy die castings, zinc or cadmium plated sheet or components, hot dip galvanized stock, and Galvanneal.

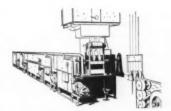


Typical aircraft dip installation.

It may be used in place of anodic deposition for improved paint adhesion and corrosion resistance.

This coating is practical for production in any volume. Coating weight is 100 to 600 mg per sq. ft. Products treated include aluminum awnings, doors and windows, aircraft and aircraft parts, missile parts, roofing and siding. Particularly good when aluminum is painted prior to forming.

Zinc-iron phosphate for oil absorption (Amchem Permadine). This is a relatively heavy coating adapted to the retention of rust-inhibiting drying or nondrying oils and waxes on ferrous metal surfaces. The coating is applied to a weight of 1000 to 4000 mg per sq. ft.



Typical continuous strip line installation.

The process is satisfactory for large or small work in any volume-nuts, bolts, hardware, guns, tools, etc.

Zinc-iron phosphate for metal forming (Amchem Granodraw). This is a specialized coating used in con-junction with a suitable lubricant to facilitate the cold mechanical de-formation of steel. The coating acts as an anchor for the lubricant throughout drawing, extrusion, and cold forming operations.

It is a successful treatment for products such as blanks and shells for cold forming, heavy stampings, impact extruded shapes, drawn wire and tube.

For more complete information about any one or all of these chemical conversion coatings, contact an Amchem sales representative or write us at Ambler 26, Pa.



# AMCHEM PRODUCTS, INC. (Formerly American Chemical Paint Co.)

AMBLER 26, PA. • Detroit, Mich., St. Joseph, Mo., Niles, Calif., Windsor, Ont. Amchem, Granodine, Thermoil-Granodine, Duridine, Lithoform, Alodine, Permadine and Granodraw are registered trademarks of Amchem Products, Inc.

#### **MILL PRODUCTS**

(Cents per lb unless otherwise moted)

#### ALUMINUM

(Base 30,000 lb, f.o.b. customer's plant) Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alioy	.032	.081	,136 .249	250- 3.
1100, 3003	45.7	43.8	42.8	43 3
	53.1	48.4	46.9	46.0
	50.1	45.7	43.9	44.9

#### Extruded Solid Shapes

			F	00	VC.	t	0	9							-	6063 T-5	6	062 T-6
<b>6-</b> 8																42.7-44.2		1-54.8
12-14.		٠				۰								,		42.7-44.2		0-56 5
24-26																43.2-44.7		8-67.8
26-38		0			۰	9		,	0	0	0	0	0			46.7-49.2	86	9-90 1

#### Screw Machine Stock-2011-T-3

Size*	34	36-36	34-1	134-134
Price	62.0	61.2	59.7	57.3

#### Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
019 gage	\$1.411	\$1.884	\$2.353	\$2.823
	1.762	2.349	2.937	3.524

#### MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed) Sheet and Plate

Type↓ Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand, Grade		67.9	69.0	77.9	103.1
AZ31B Spec		93.3	95.7	108.7	171.3
Tread Plate		70.6	71.7		
Tooling Plate	73.0				

#### Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

#### Alloy Ingot

AZ91B (Die Cast	ting)		37.25	(delivered)	
AZ63A, AZ92A, A	Z91C (Sand	Casting)	40.75	(Velasco, Tex.	

#### NICKEL, MONEL, INCONEL

(2000 proces 1.0.0. moss)		
"A" Nickel	Monel	Inconel
Sheet, CR 138	120	138
Strip, CR 124	108	138
Rod, bar, HR 107	89	109
Angles, HR 107	89	109
Plates, HR 130	110	126
Seamless tube . 157	129	200
Shot, blocks	87	

#### COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	57.13		54.86	58.32
Brass, Yellow	50.57	50.86	50.26	54.23
Bram, Low	53.53	53.82	53.22	57.09
Brass, R L	54.58	54.87	54.27	58.14
Brass, Naval	55.12		48.68	58.78
Munts Metal	53.20		48.26	
Comm. Bs.	56.17	56.46	55.86	59.48
Mang. Bs.	58.86		52.21	
Phos. Bs. 5%	77 44		78.19	

#### TITANIUM

(Base prices f.o.b. mill)

Sheet and strip, commercially pure, \$7.25-\$8.50; alloy, \$13.40-\$17.00. Plate, HR, commercially pure, \$5.25-\$6.00; alloy, \$8.00-\$10.00 Wire, rolled and/or drawn, commercially pure, \$5.75-\$8.25; alloy, \$7.75-\$10.00; Bar, HR or forged, commercially pure, \$4.25-\$6.00; alloy, \$4.25-\$7.50; billets, HR, commercially pure, \$3.55-\$4.10; alloy, \$3.55-\$5.75.

#### PRIMARY METAL

(Cents ner Ih unless athermies mated)

(Conta per to unicas otherwise notett)
Antimony, American, Laredo, Tex., 29.5
Beryllium Aluminum 5% Be, Dollar
per lb contained Be\$74.7
Beryllium copper, per lb conta'd Be.\$43.0
Beryllium 97% lump or beads.
f.o.b. Cleveland, Reading\$71.5
Bismuth, ton lots \$ 2.2
Cadmium, del'd \$ 1.4
Calcium, 99.9% small lots \$ 4.5
Chromium, 99.8% metallic base\$ 1.3
Cobalt, 97-99% (per lb) \$1.75 to \$1.8
Germanium, per gm, f.o.b. Miami,
Okla., refined
Gold, U. S. Treas., per troy oz\$35.0
Indium, 99.9%, dollars per troy oz. \$ 2.2

Indium, 99.9%, dollars per troy oz. \$2.25
Iridium, dollars per troy oz. \$75 to \$85
Lithium, 98% . \$11.00 to \$14.00
Magnesium sticks, 100 to 500 lb. 59.00
Mercury, dollars per 76-lb flask
f.o.b. New York . \$215 to \$217
Nickel oxide sinter at Buffalo, N. Y.,
or other U. S. points of entry,
contained nickel . 69.60
Palladium, dollars per troy oz. \$22 to \$24
Platinum, dollars per troy oz. \$77 to \$80
Rhodium . \$120.00 to \$125.00
Silvèr ingots (¢ per troy oz.) 91.375
Thorium, per kg . \$43.00
Vanadium . \$3.45
Zirconium sponge . \$5.00

#### REMELTED METALS

#### Brass Ingot

(Cents per lb delivered, carloads)

85-5-5	ingo	t															
No.	115																30.75
No.	120																29.25
No.	123																28.75
80-10-	10 in	g	o	t													
	305																35.25
No.	315																33.00
88-10-	2 ing	0	t														
	210							0									44.00
No.	215						۰	٠									40.75
No.	245																36.00
Yellow	ing	01	Ł														
No.	405								0								24.75
Mange	nese	1	bi	re	01	112	20	8									
No.	421																29.25

#### Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper max25.00-	25.25
0.60 copper max24.75-	
Piston alloys (No. 132 type) 26.75-	27.75
No. 12 alum. (No. 2 grade) 23.50-	24.00
108 alloy24.00-	24.50
195 alloy	27.50
13 alloy (0.60 copper max.)24.75-	25.00
AXS-679 (1 pet zinc)23.75-	24.75

#### Steel deoxidizing aluminum notch bar granulated or shot

Grade	1-95-971/2	%				0	0	0				0	.24.00-25.00
Grade	2-92-95%				٠	۰			۰			۰	. 22.75-23.75
Grade	3-90-92%	0	0	0	0	0		0	۰	0	0	٠	.21.75-22.75
Grade	4-85-90%		0	0	0		0	۰			٠	۰	.21.25-22.25

#### SCRAP METALS

#### Brass Mill Scrap

(Cents per pound, add 1¢ per lb for ship-

ments	0/ 20,000	10	ana	over)	
				Heavy	Turnings
Copper				29	28 1/4
	brass			221/4	20 1/4
	rass			25 %	25
	bronze			26 14	26
	bronze .			20%	20
Free c	utting rod	er	ids.	211/4	

# Customs Smelters Scrap (Cents per pound carload lots, delivered

to regnery)	
No. 1 copper wire	29 1/2
No. 2 copper wire	26
Light copper	23 34
*Refinery brass	241/4
*Dry copper content.	23 1/4

EAST

# Ingot Makers Scrap (Cents per pound carload lots, delivered

			to	76	n	n	$e\gamma$	·y	,			
No. 1	copper	r v	vire									29 1/2
No. 2												25 1/2
Light												23 1/4
	compo											23
	comp.											22 14
	yellow											10%
Brass												16%
Radia	tors					0			D	0	0	18

Radiat	ors				D	0 0		18
		Alun						
Mixed	old cast.						14	-15
Mixed	new clips						16	½17
Mixed	turnings,	dry			D		14	½—15 <del>¼</del>

# Dealers' Scrap (Dealers' buyin

# buying price f.o.b. New York in cents per pound)

Copper and Brass
No. 1 copper wire 25 -25 1/2
No. 2 copper wire 22 -22 1/2
Light copper 20 1/2 21
Auto radiators (unsweated). 1412-15
No. 1 composition 18½—19
No. 1 composition turnings 17 -17 1/2
Cocks and faucets 15 -15 1/2
Clean heavy yellow brass 13 -13 1/2
Brass pipe
New soft brass clippings 15 1/4 15 1/4
No 1 brass rod turnings 1216-13

# Aluminum Alum. pistons and struts $7\frac{1}{2} - 8$ Aluminum crankcase $11\frac{1}{4} - 11$ 1100 (2s) aluminum clippings 15 - 15Old sheet and utensils $11\frac{1}{4} - 11$ Borings and turnings 7 - 7Industrial castings $11\frac{1}{4} - 11$ 2020 (24S) clippings $12\frac{1}{2} - 13$

Aine
New zinc clippings 64 - 6%
Old zinc 414-48
Zinc routings 3 - 31/2
Old die cast scrap 21/2 - 21/4
Nickel and Monel
Pure nickel clippings 52-5
Clean nickel turnings 40
Nickel anodes 52-5

Pure nickel clippings	52-54
Clean nickel turnings	40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	20-23
Old sheet Monel	26-28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15
Lead	0.1/

Lead									
Soft scrap lead		 0	0			 0			9 1/4
Battery plates									43%
Batteries, acid	free	 0	0	0	0 1	 0	23	5-	2 %
Miscellaneous									
Block tin		 9	0		0 0		77	-	78

No. 1 pewter	59 60
Auto babbitt	40 -41
Mixed common babbitt	9 % -10 %
Solder joints	14 -141/2
Siphon tops	42
Small foundry type	10%-10%
Monotype	10%-10%
Lino. and stereotype	91/4 - 9 %
Electrotype	7% - 8%
Hand picked type shells	6 6 1/2
Lino. and stereo. dross	2% - 3%
Electro dross	2%- 3%

19	RON AGE		Italies idea	stify produce	rs listed in	key at end of	table. Bas	prices, f.o.b.	mill, in cents	per lb., unless o	therwise no	ted. Extras	apply.	
	STEEL	BILLE	TS, BLO SLABS	oms,	PIL-		SHAPES				STR	IP		
P	RICES	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
	Bothlehem, Pa.			\$119.00 B3		5.55 B3	8.10 B3	\$.55 <i>B5</i>						
	Bufalo, N. T.	\$80.00 R3, B3	\$99.50 R3	\$119.00 R3, B3	6.50 B3	5.55 B3	8.10 B3	5.55 B3	\$.10 B3, R3	7.425 S10, R2	7.575 B3			
1	Phila., Pa.									7.875 P/5				
	Harrison, N. J.							-						15.55 C/
1	Conshohocken, Pa.		\$104.50 //2	\$126.00 //2					5.15 A2		7.575 A2			
1	New Bedford, Mass.							-		7.875 R6				
- 1	Johnstown, Pa.	\$80.00 B3	\$99.50 B3	\$119.00 B3		5.55 B3	8.10 B3							
EAST	Boston, Mass.									7.975 T8				
	New Haven, Conn.									7.875 DI				
	Baltimore, Md.									7.425 T8				15.90 To
	Phoenixville, Pa.					5.55 P2		5.55 P2						
	Sparrowa Pt., Md.								5.10 B3		7.575 B3			
	New Britain, Bridgeport, Wallingford, Conn.			\$119.00 N8						7.875 W1,S7				
	Pawtucket, R. I. Worcester, Mass.									7.975 N7,				15.90 Ni 15.70 Ti
-	Alten, III.								5.30 L1					
	Ashland, Ky.								5.10 A7		7.575 A7			
	Canton-Massillon, Dover, Ohio		\$102.00 R3	\$119.00 R3, \$114.00 T5						7.425 G4		10.80 G4		
	Chicago, Franklin Park, Evanston, III.	\$80.00 UI, R3	\$99.50 U1, R3,W8	\$119.00 U1, R3,W8	6.50 UI	S.50 UI. W8,P13	8.05 UI. YI,W8	5.50 UI	5.10 W8, N4,A1	7.525 <i>A1</i> , <i>T8</i> , <i>M8</i>	7.575 W8		8.40 W8, S9,13	15.55 A S9,G4,
	Cleveland, Ohio									7.425 A5, J3		10.75 A5	8.40 /3	
	Detroit, Mich.			\$119.00 R5					5.10 G3, M2	7.425 M2, S1, D1,P11	7.575 G3	10.80 51		
	Anderson, Ind.								101.6	7.425 G4				
WEST	Gary, Ind. Harbor, Indiana	\$80.00 UI	\$99.50 UI	\$119.00 UI,		5.50 UI,	8.05 UI,	5.50 /3	S.10 UI, 13, YI	7.425 Y/	7.575 UI, I3, YI	10.90 Y/	8.40 UI.	
Est.		*** *** N/4				5.50 N4	7.75 N4	5.50 N4	5.20 N4		13,11			
MIDDL	Sterling, III.	\$80.00 N4				3.30 /14	1.15/14	3.30 /47	3.20 /44	7 575 D6				15.70 R
Σ	Indianapolis, Ind.								5.10 49	7.575 R5			8.40 A9	13.70 K
	Newport, Ky. Niles, Warren, Ohio		\$99.50 SI,	\$119.00					S.10 R3.	7.425 R3,	7.575 R3,	10.80 R3.	8.40 SI	15.55 S
	Sharon, Pa.		CIO	C10,S1					SI	T4,SI	SI	SI	0.10 07	10000
	Owensbore, Ky.	\$80.00 G5	\$99.50 G5	\$119.00 G5	0 TO 111	C CO 111	0.057//	F. CO. 1/1	F 10 P6	2 495 12 D4			0.40.00	15 55 C
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	\$80.90 UI. P6	\$99.50 UI, CII.P6	\$119.00 UI, CII,B7	6.50 UI	5.50 UI, J3	8.05 UI, J3	5.50 UI	5.10 P6	7.425 <i>J3,B4</i> 7.525 <i>E3</i>			8.40 S9	15.55 5
	Weirton, Wheeling, Follanshee, W. Va.				6.50 UI. W3	5.50 W3		5.50 W3	5.10 W3	7.425 W5	7.575 W3	10.80 W3		
	Youngstown, Ohio	\$80.00 R3	\$99.50 YI, C10	\$119.00 Y/			8.85 YI		5.10 U	7.425 Y1,R5	7.575 UI, YI	10.95 Y/	8.40 UI. YI	15.55 R
_	Fontana, Cal.	\$90.50 K1	\$109.00 K1	\$140.00 K/		6.30 K/	8.85 K1	6.45 K1	5.825 K1	9.20 K/				
	Geneva, Utah		\$99.50 C7			5.50 C7	8.05 C7							
	Kansas City, Mo.					5.60 S2	8.15 S2						8.65 S2	
6	Los Angeles, Torrance, Cal.		\$109.00 B2	\$139.00 B2		6.20 C7, B2	8.75 B2		5.85 C7, B2	9.30 C1,R5			9.60 B2	17.75 J
WEST	Minnequa, Colo.				-	5.80 C6			6.20 C6	9.375 C6				
55	Portland, Ore.					6.25 02								
	San Francisco, Niles, Pittsburg, Cal.		\$109.00 B2			6.15 B2	8.70 B2		5.85 C7, B2					
	Seattle, Wash.		\$109.00 B2			6.25 B2	8.80 B2		6.10 B2					-
-	Atlanta, Ga.		-			5.70 A8			5.10 .48					
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$80.00 72	\$99.50 72			5.50 T2 R3,C16	8.65 72		5.10 T2, R3,C/6		7.575 T2			
So	Houston, Lone Star,		\$104.50 S2	\$124.00 S2		5.60 S2	8.15 S2						8.65 S2	

	IRON AGE		Italics ider	ntify producers	listed in key	at end of tabl	le. Base price	s, f.o.b. mill, i	n cents per lb	., unless other	wise noted. E	xtras apply.	
	STEEL				SHE	ETS				WIRE ROD	TINP	LATE†	
	PRICES	Hot-rolled 18 ga. & hvyr.	Cold- rolled	Galvanized (Hot-dipped)	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	E.lectro** 0.25-lb. base box	Hollowar Enamelin 29 ga.
	Buffalo, N. Y.	5.10 B3	6.275 B3				7.525 B3	9.275 B3		6.40 W6	† Special con deduct 35c	ated mfg. terne rom 1.25-lb. ox price, 0.75	
	Claymont, Del.										lb./0.25 lb. a	dd 55c.	
	Coatesville, Pa.										Can-maki BLACKPLA	TE 55 to 128	
	Conshohocken, Pa.	5.15 A2	6.325 A2				7.575 A2				lb. deduct \$2 1.25 lb. coke	base box.	
	Harrisburg, Pa.										* COKES add 25c.	: 1.50-16. ): 0.50-lb. add	
-	Hartford, Conn.										25c; 0.75 lb.	add 65¢; 1.00-	
EAST	Johnstown, Pa.									6.40 B3	1.00 lb./0.25		
	Fairless, Pa.	5.15 UI	6.325 UI				7.575 UI	9.325 UI			\$10.50 UI	\$9.20 UI	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	\$.10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	\$10.40 B3	\$9.10 B3	
	Worcester, Mass.									6.70 A5			
	Trenton, N. J.												
	Alton, III.									6.60 L1			
	Ashland, Ky.	5.10 A7		6.875 A7	6.775 A7		7.525 A7						
	Canton-Massillon, Dover, Ohio			6.875 R1, R3									
	Chicago, Joliet, Ill.	5.10 W8, Al		R)			7.525 <i>UI</i> , <i>W</i> 8			6.40 A5, R3,W8			
	Ca-R IN									6 F0 N/4 N/2			
	Sterling, Ill. Cleveland, Ohio	5.10 R3,	6.275 R3,	7 CE D28	6 99E D2		y ESE D2	A 995 D2		6.50 N4, K2			
	Cieveiang, Onio	J3	13 K),	7.65 R3*	6.775 R3		7.525 R3, J3	9.275 R3, J3		6.40 A5			
	Detroit, Mich.	\$.10 G3, M2	6.275 G3, M2				7. <b>525</b> <i>G</i> 3	9.275 G3					
_	Newport, Ky.	5.10 //9	6.275 A9										
WEST	Gary, Ind. Harbor, Indiana	5.10 UI, I3, YI	6.275 UI, 13, YI	6.875 UI, 13	6.775 U1, 13, Y1	7.225 UI	7.525 UI, YI,13	9.275 UI, YI		6.40 YI	\$10.40 UI, YI	\$9.10 /3, UI, YI	7.85 UI, YI
TE	Granite City, III.	5.20 G2	6.375 G2	6.975 G2								\$9.20 G2	7.95 G2
MIDDLE	Kokomo, Ind.			6.975 C9						6.50 C9			
Σ	Mansfield, Ohio	5.10 E2	6.275 E2			7.225 E2							
	Middletown, Ohio		6.275 A7	6.875 A7	6.775 A7	7.225 A7							
	Niles, Warren, Ohio Sharon, Pa.	5.10 R3, S1	6.275 R3	6.875 R3 7.65 R3*	8.775 SI	7.225 S1°, R3	7.525 R3, S1	9.275 R3,				\$9.10 R3	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 UI. J3,P6	6.275 U1, J3,P6	6.875 UI, J3 7.50 E3*	6.775 UI		7.525 UI. J3	9.275 UI, J3	10.025 UI, J3	6.40 A5. J3,P6	\$10.40 UI. J3	\$9.10 UI, J3	7.85 UI, J3
	Portsmouth, Ohio	5.10 P7	6.275 P7			-				6.40 P7			
	Weirton, Wheeling, Folianabee, W. Va.	5.10 W3, W5	6.275 W3, F3,W5	6.875 W3, W5 7.50 W3*		7.225 W3, W5	7.525 W3	9.275 W3			\$10.40 W5, W3	\$9.10 W5, W3	7.85 W5
	Youngstown, Ohio	5.10 UI, YI	6.275 Y/	7.50 /3*	6.775 YI		7.525 Y/	9.275 Y/		6.40 Y/			
-	Fontana, Cal.	5.825 K1	7.40 K1				8.25 KI	10.40 K1			\$11.05 K1	\$9.75 K/	
	Geneva, Utah	5.20 C7											
ST	Kansus City, Mo.									6.65 S2			
WEST	Izos Angeles, Torrance, Cal.						,			7.20 B2			
	Minnequa, Colo.									6.65 C6			
	San Francisco, Niles, Pittsburg, Cal.	5.88 C7	7.225 C7	7.625 C7						7.20 C7	\$11.05 C7	\$9.75 C7	
H	Atlanta, Ga.												
SOUTH	Fairfield, Ala. Alabama City, Ala.	5.10 T2, R3	6.275 T2, R3	6.875 T2, R3	6.775 T2					6.40 T2,R3	\$10.50 72	\$9.28 T2	

<sup>\*</sup> Electrogalvanized sheets,

	STEEL			ВА	RS				PLA"	TES		WIRE
	PRICES	Carbon† Steel	Reinforc-	Cold Finished	Alloy Hot- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's Bright
	Bethlehem, Pa.				6.725 B3	9.025 B3	8.30 B3					
	Buffalo, N. Y.	5.675 R3,B3	5.675 R3,B3	7.70 B5	6.725 B3,R3	9.025 B3,B5	8.30 B3	5.30 B3				8.00 W6
	Claymont, Del.							5.30 C4		7.50 C4	7.05 C4	
	Coatesville, Pa.							5.30 L4		7.50 L4	7.95 L4	
	Conshohocken, Pa.							5.30 A2	G.375 A2	7.50 A2	7.95 A2	
	Harrisburg, Pa.							5.30 P2	6.375 P2			
	Milton, Pa.	5.825 M7	5.825 M7									
	Hartford, Conn.			8.15 R3		9.325 R3						
ST	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3		8.30 B3	5.30 B3		7.50 B3	7.95 B3	8.00 B3
EAST	Fairless, Pa.	5.825 UI	5.825 UI		6.875 UI							
	Newark, Camden, N. J.			8.10 W10, P10		9.20 W10, P10						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 W10 8.15 J3	6.80 N8	9.175 N8						
	Sparrows Pt., Md.		5.675 B3					5.30 B3		7.50 B3	7.95 B3	8.10 B3
	Palmer, Worcester, Roadville.			8.20 B5, C/4		9.325 A5,B5						8.30 A5, W6
	Mansfield, Mass.			9.10.K4		9.20 K4		-			-	
_	Spring City, Pa.  Alton, Ill.	5.875 <i>LI</i>		8.10 K4		3.20 K 7		-				8.20 L1
	Ashland, Newport, Ky.	3.513 LI						5.30 47, 49		7.50 /49	7.95 A7	6.20 L1
	Carton, Massillon,	6.15° R3		7.65 R3.R2	6.725 R3	9.025 R3,R2		5.30 E2		1.30 7/7	1.33 /1/	
	Mansfield, Okio	0.13 1/3		1.00 10,10	6.475 T5	8.775 T5		5.50 1.5				
	Chicago, Joliet, Waukogan, Madison, Harvey, III.	5.675 UI, R3, W8, N4, P13	5.675 U1, R3, N4, P13, W8 5.875L1	7.65 A5, W10,W8, B5,L2,N9	6.725 UI,R3, W8	9.025 A5, W10,W8, L2,N8,B5	8.30 U1,W8, R3	5.30 UI, AI, W8, I3	6.375 UI	7.50 UI, W8	7.95 UI, W8	8.00 A5, R W8, N4, K2, W7
	Cleveland, Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5,C13, C18		9.025 A5, C13,C18	8.30 R3	5.30 R3,J3	6.375 /3		7.95 R3, J3	8.00 A5, C13,C18
	Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3 7.85 P8,B5 7.65 R5	6.725 R5,G3	9.025 R5 9.225 B5, P3, P8	8.30 G3	5.30 G3		7.50 G3	7.95 G3	
	Duluth, Minn.											8.00 A5
WEST	Gary, Ind. Harbor, Crawfordaville, Hammond, Ind.	5.675 U1.13, YI	5 675 U1.13, Y1	7.65 R3,J3	6.725 U1,13, Y1	9.025 R3,M4	8.30 UI, YI	5.30 U1,13, Y1	6.375 J3, 11	7.50 UI, YI	7.95 U1, Y1,13	8.10 M4
J.E	Granite City, III.							5.40 G2				-
MIDDL	Kokomo, Ind.		5.775 C9								-	8.10 C9
2	Sterling, III.	5.775 N4	5.775 N4					5.30 N4	-			8.10 K2
	Niles, Warren, Ohio		-	7.65 C/O	6.725 C/O.	9.025 C10		5.30 R3,S1		7.50 S1	7.95 R3,	
	Sharon, Pa.										SI	
	Owensboro, Ky.	5.675 G5			6.725 G5							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 U1, J3	5.675 U1, J3	7.65 A5,B4, R3,J3,C11, W10,S9,C8, M9	6.725 U1, J3, C11,B7	9.025 A5, W10,R3,S9, C11,C8,M9	8.30 U1,J3	5.30 U1, J3	<b>6.375</b> U1, <b>J</b> 3	7.50 U1, J3, B7	7.95 U1, J3,87	8.00 A5, J3,P6
	Portsmouth, Ohio											8.00 P7
	Weirton, Wheeling,							5.30 W5				
	Foliansbee, W. Va.											
	Youngstown, Ohio	5.675 UI, R3, YI	5.675 U1,R3, Y1	7.65 AI, YI, F2	6.725 UI, YI	9.025 YI,F2	8.30 UI, YI	5.30 UI, R3, Y1		7.50 Y/	7.95 U1, Y1	8.00 Y/
	Emeryville, Fontana, Cal.	6.425 /5 6.375 KI	6.425 <i>J5</i> 6.375 <i>K1</i>		7.775 KI		9.00 K1	6.10 KI		8.30 KI	8.75 K1	
	Geneva, Utah							5.30 C7			7.95 C7	
	Kansas City, Mo.	5.925 S2	5.925 S2		6.975 S2		8.55 S2					8.25 S2
ST	Los Angeles, Torrance, Cal.	6.375 C7,B2	6.375 C7,B2	9.10 R3,P14, S/2	7.775 B2	11.00 P/4, S/2	9.00 B2					8.95 B2
WEST	Minnequa, Colo.	6.125 C6	6.125 C6				-	6.15 C6				8.25 C6
	Portland, Ore.	6.425 02	6.425 02									
i	San Francisco, Niles, Pittsburg, Cal.	6.375 C7 6.425 B2	6.375 C7 6.425 B2				9.05 B2					8.95 C7,C
	Seattle, Wash.	6.425 B2,N6, A10	6.425 B2,A10				9.05 B2	6.20 B2		8.40 B2	8.85 B2	
_	Atlanta, Ga.	5.875 //8	5.675 A8									8.00 //8
SOUTH	Fairfield City, Ala. Birmingham, Ala.	5.675 T2,R3, C/6		8.25 C/6			8.30 T2	5.30 T2,R3			7.95 T2	8.00 T2,R
-	Houston, Ft. Worth,	Allert sections and the section of	5.925 S2							AND REAL PROPERTY AND ADDRESS.		8.25 S2

<sup>†</sup> Merchant Quality-Special Quality 35¢ higher. (Effective Dec. 14, 1959)

<sup>\*</sup> Special Quality.

#### STEEL PRICES

#### **Key to Steel Producers**

With Principal Offices

Al Acme Steel Co., Chicago

Alan Wood Steel Co., Conshohocken, Pa.

43 Allegheny Ludlum Steel Corp., Pittsburgh

A4 American Cladmetals Co., Carnegie, Pa. 45 American Steel & Wire Div., Cleveland

Angel Nail & Chaplet Co., Cleveland

47 Armco Steel Corp., Middletown, Ohio 48 Atlantic Steel Co., Atlanta, Ga.

49 Acme Newport Steel Co., Newport, Ky.

A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.

B2 Bethlehem Steel Co., Pacific Coast Div.

B3 Bethlehem Steel Co., Bethlehem, Pa.

Blair Strip Steel Co., New Castle, Pa.

Bliss & Laughlin, Inc., Harvey, Ill. B6

Brook Plant, Wickwire Spencer Steel Div., Birdsboro, Pa.

B7 A. M. Byers, Pittsburgh

BB Braeburn Alloy Steel Corp., Braeburn, Pa.

Cl Calstrip Steel Corp., Los Angeles

C2 Carpenter Steel Co., Reading, Pa.

C4 Claymont Products Dept., Claymont, Del.

C6 Colorado Fuel & Iron Corp., Denver

Columbia Geneva Steel Div., San Francisco

C8 Columbia Steel & Shafting Co., Pittsburgh

C9 Continental Steel Corp., Kokomo, Ind. C10 Copperweld Steel Co., Pittsburgh, Pa.

CII Crucible Steel Co. of America, Pittsburgh

C13 Cuyahoga Steel & Wire Co., Cleveland

C14 Compressed Steel Shafting Co., Readville, Mass.

C15 G. O. Carlson, Inc., Thorndale, Pa.

C16 Conners Steel Div., Birmingham C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

DI Detroit Steel Corp., Detroit D2 Driver, Wilbur B., Co., Newark, N. J.

D3 Driver Harris Co., Harrison, N. I.

D4 Dickson Weatherproof Nail Co., Evanston, Ill.

El Eastern Stainless Steel Corp., Baltimore

E2 Empire Reeves Steel Corp., Mansfield, O.

E3 Enamel Products & Plating Co., McKeesport, Pa.

FI Firth Sterling, Inc., McKeesport, Pa.

F2 Fitzsimons Steel Corp., Youngstown F3 Follansbee Steel Corp., Follansbee, W. Va. G2 Granite City Steel Co., Granite City, Ill.

G3 Great Lakes Steel Corp., Detroit

64 Greer Steel Co., Dover, O.

65 Green River Steel Corp., Owenboro, Ky.

HI Hanna Furnace Corp., Detroit

12 Ingersoll Steel Div., New Castle, Ind.

13 Inland Steel Co., Chicogo, Ill. 14 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.

J2 Jessop Steel Corp., Washington, Pa.J3 Jones & Laughlin Steel Corp., Pittsburgh

Joslyn Míg. & Supply Co., Chicago

35 Judson Steel Corp., Emeryville, Calif.

KI Kaiser Steel Corp., Fontana, Calif.

K2 Keystone Steel & Wire Co., Peoria

K4 Keystone Drawn Steel Co., Spring City, Pa.

LI Laclede Steel Co., St. Louis

L2 La Salle Steel Co., Chicago

L3 Lone Star Steel Co., Dallas

L4 Lukens Steel Co., Cortesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.

M2 McLouth Steel Corp., Detroit

M3 Mercer Tube & Mfg. Co., Sharon, Pa.

M4Mid States Steel & Wire Co., Crawfordsville, Ind.

M6 Mystic Iron Works, Everett, Mass.

M7 Milton Steel Products Div., Milton, Pa.

M8 Mill Strip Products Co., Chicago, Ill.

M9 Moltrup Steel Products Co., Beaver Falls, Pa.

National Supply Co., Pittsburgh NI

National Tube Div., Pittsburgh

N4Northwestern Steel & Wire Co., Sterling, Ill.

N6 Northwest Steel Rolling Mills, Seattle

Newman Crosby Steel Co., Pawtucket, R. I. N7 NB Carpenter Steel of New England, Inc., Bridgeport, Conn.

N9 Nelson Steel & Wire Co.

01 Oliver Iron & Steel Co., Pittsburgh

02 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.

P2 Phoenix Steel Corp., Phoenixville, Pa.

Pilgrim Drawn Steel Div., Plymouth, Mich.

Pittsburgh Coke & Chemical Co., Pittsburgh P6 Pittsburgh Steel Co., Pittsburgh

P7

Portamouth Div., Detroit Steel Corp., Detroit Plymouth Steel Co., Detroit P8

Pacific States Steel Co., Niles, Cal.

P10 Precision Drawn Steel Co., Camden, N. J.

P11 Production Steel Strip Corp., Detroit

P13 Phoenix Mfg. Co., Joliet, Ill.

P14 Pacific Tube Co.

P15 Philadelphia Steel and Wire Corp.

RI Reeves Steel & Mig. Div., Dover, O. Reliance Div., Eaton Mfg. Co., Massillon, O.

R3 Republic Steel Corp., Cleveland

Roebling Sons Co., John A., Trenton, N. J. R4

Jones & Laughlin Steel Corp., Stainless and Strip Div. R5

Rodney Metals, Inc., New Bedford, Mass. R6

R7 Rome Strip Steel Co., Rome. N. Y.

SI Sharon Steel Corp., Sharon Pa.

Sheffield Steel Div., Kansas City 52

Shenango Furnace Co., Pittsburgh

54 Simonds Saw and Steel Co., Fitchburg, Mass. Sweet's Steel Co., Williamsport, Pa. S5

Stanley Works, New Britain, Conn. **S7** 

Superior Drawn Steel Co., Monaca, Pa

Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa. 59

\$10 Seneca Steel Service, Buffalo

Southern Electric Steel Co., Birmingham SII

S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

\$13 Seymour Mig. Co., Seymour, Conn

S14 Screw and Bolt Corp. of America, Pittsburgh, Pa.

71 Tonawanda Iron Div., N. Tonawanda, N. Y.

Tennessee Coal & Iron Div., Fairfield T2

Tennessee Products & Chem. Corp., Nashville

74 Thomas Strip Div., Warren, O.

75 Timken Steel & Tube Div., Canton, O.

T7 Texas Steel Co., Fort Worth

78 Thompson Wire Co., Boston

Ul United States Steel Corp., Pittsburgh

U2 Universal Cyclops Steel Corp., Bridgeville, Pa.

U3 Ulbrich Stainless Steels, Wallingford, Conn.

U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.

W2 Washington Steel Corp., Washington, Pa. W3 Weirton Steel Co., Weirton, W. Va.

W4 Wheatland Tube Co., Wheatland, Pa.

W5 Wheeling Steel Corp., Wheeling, W. Va.

W6 Wickwire Spencer Steel Div., Buffalo W7 Wilson Steel & Wire Co., Chicago.

W8 Wisconsin Steel Div., S. Chicago, III.

W9 Woodward Iron Co., Woodward, Ala.

W10 Wyckoff Steel Co., Pittsburgh

W12 Wallace Barnes Steel Div., Bristol, Conn. YI Youngstown Sheet & Tube Co., Youngstown, O.

# PIPE AND TUBING

Base discounts (nct) f.o.b. mills. Base price about \$200 per net ton.

							BUTT	WELD										SEAN	ILESS			
	1/2	In.	3/4	ln.	11	a	11/4	In.	11/2	in.	2	in.	21/2-	3 In.	2	ln.	21/1	In.	3	la.	31/2-	4 In.
STANDARD T. & C.	Blk.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Blk.	Gal.	Bik.	Gel.	Bik.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. B3 Youngstown R3	0.25	*15.0 *13.0	3.25		6.75	*6.50	9.25	+5.75	9.75	*4.75										-1-11		
Fontana K/	*10.75		5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25		13.75	*2.50			*****				143171	
Pittsburgh 13	2.25	*13.0	5.25	*22.00 *9.0	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25		+15.50	419 95	497 95	46 70	*22.50	*3.25	490 0	+1 75	+18 S
Alton, Ill. LI	0.25	*15.0	3.25	*11.0	8.75	44.50	11.25	45.75	11.75	*2.75 *4.75	12.25	*2.25 *4.25	13.75		+12.25	*Z1.Z5		*22.30		-20.0	1.13	10.0
Sharon M3	2.25		5.25	+9.0	0.75	*6.58	9.25	49.75	9.75	+2.75	10.25	+2.25	11.75	*2.50								
Fairless N2	0.25		3.25	*11.0	6.75	46 50	0.25	45 75	0.75	+4.75	10.25	+4.25	13.75	*4.50			25555					
Pittsburgh N/	2.25		5.25	*9.0	0.75	+4 SO	11 25	49 75	11 75	+2.75	19 95	49 95	19.75	+2.50	+12.25	+97 95	+5 75	+22 50	+3.25	*20.0	*1.75	+18.50
Wheeling W5	2.25		5.25	*9.0	8 75	44 50	11 25	+2 75	11 75	+9 75	12.25	+2.25	13.75	+2.50	16.60	20.20	0.00	25.00	0.00	40.0		
Wheatland W4	2.25		5.25	*9.0	8.75	+4 50	11 25	+3 75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Youngstown Y/	2.25		5.25	*9.0	8.75	*4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	*5.75	+22.50	*3.25	*20.0	*1.75	+18.5
Indiana Harbor Y/	1.25		4.25	*10.0	7.75	*5.50	10.25	+4.75	10.75	+3.75			12.75									
Lorain N2	2.25	*13.0	5.25	*9.8	8.75		11.25	+3.75	11.75	*2.75	12.25	+2.25	13.75	*2.50	+12.25	*27.25	+5.75	+22.50	*3.25	*20.0	*1.75	*18.5
EXTRA STRONG PLAIN ENDS										-												
Sparrows Pt. B3	4.75		8.75	+5.0	11.75	*0.50	12.25	*1.75	12.75	+0.75	13.25	*0.25	13.75									
Youngstown R3	6.75		10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25			0.50								
Fairless N2	4.75		8.75	*5.0	11.75	*0.50	12.25	+1.75	12.75	*0.75				+1.50								
Fontana K1	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75			22332	******		125.745			411 6
Pittaburgh J3	6.75		10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25			0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.5
Alton, Ill. Ll	4.75		8.75	+5.0	11.75	*0.50	12.25	*1.75	12.75	+0.75	13.25			*1.50								
Sharon M3	6.75	*7.0		+3.0	13.75	1.50	14.25	0.25	14.75	1.25				0.50	111111	120721	40.00		40 95	410 70	4 90	411 6
Pittsburgh N1	6.75	*7.0		*3.0	13.75	1.50	14.25	0.25	14.75	1.25				0.50		*24.75	+3.25	*19.0	.0.72	*16.50	4.23	.11.3
MARKS OF A TAXA	6.75	*7.0		*3.0	13.75	1.50	14.25	0.25	14.75	1.25				0.50				*****				
Youngstown Y/	6.75		10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25				0.50		+24.75	+2 25	*19.0	+0.75	+16.50	4.25	+11.5
Indiana Harbor Y/	5.75		9.75	+4.0	12.75	0.50	13.25	+a 75	13.75	0.25								13.0				1
Lorain N2.	6.75			*3.0	13.75	1.50	14.25	0.75	14.75		15.25		15.75			+24.75	+3.25	*19.8	*0.75	+16.50	4.25	+11.5

Threads only, buttweld and seamless, 2½ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.

Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2c change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1½, 1½ and 2-in., 1½ pt.; 1½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts.

East St. Louis zinc price now 12,50¢ per lb. (Effective Dec. 14, 1959)

#### TOOL STEEL

F.o.b.	mili Cr	v	Mo	Co	per lb	SAE
18	4	1	-	-	\$1.84	T-1
18	4	1	-	5	2.545	T-4
18	4	2	_	_	2.005	T-2
1.5	4	1.5	8	*****	1.20	M-1
6	4	3	6	-	1.59	M-3
6	4	2	5	-	1.345	M-2
High-	carbo	n chr	omiu	m	.955 I	D-3, D-5
Oil ha	ardene	d ma	ngan	ese	.505	0-2
	al car				.38	W-1
	carl				.38	W-1
	lar es				.325	W-1
					east of	Missis-

warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

LAD STE	EL	Base pri	ces, cent	s per lb f.o.b.
	Plate (	Sheet (12)		
Cladding	10 pct	15 pct	20 pct	20 pct
302				37.50
304	28.80	31.55	34.30	40.00
316	42.20	46.25	50.25	58.75
321	34.50	37.75	41.05	47.25
347	40.80	44.65	48.55	57.00
405	24.60	26.90	29.25	*****
410	22.70	24.85	27.00	
430	23.45	25.65	27.90	
	Cladding  302	Cladding 10 pct 302 304 28.80 316 42.20 321 34.50 347 40.80 405 24.60 410 22.70	Plate (L4, C4,	Plate (L4, C4, A3, J2)  Cladding 10 pct 15 pct 20 pct  302

CR Strip (S9) Copper, 10 pct, 2 sides, 44.20; 1 side, 36.80.

#### RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std.	Light Rails	Joint Bara	Track Spikes	Tie Plates	Track Belts Untreated
Bessemer UI	5.75	6 725	7.25			
Cleveland R3			1	1		35 35
So. Chicago Ri		1		10.10		10.00
So. Chicago R3 Ensley 72	5.75	6 725				
Fairfield T2		6 725		10 10	6 875	
Gary UI	5 75	0. 100		10.10	6 875	
Huntington, C/6	0.10	6 725			0.000	
Ind. Harbor /3		. 0. 160		10 10		
Johnstown B3		6 725		10.10	*****	
Joliet UI	1	4.100	7 25			
Kansas City 52				10.10		15 35
Lackawanna B3	5 75	6 725	7 25	10.10	6.875	13.30
Lebanon B3					0.0.0	
Minnequa C6	5 75	7 225	7 25	10.10	6 875	15 35
Pittahurah SIA		1	1			16 35
Pittsburgh J3				10 10		13.33
Seattle B2	1			10.10	6.75	15 85
Steelton B3	5.75		7.25			
Struthers Y1		1		10.10		
Torrance C7	1	1		100.10	6 75	
Williamsport S5	1	6.72		1		
Youngstown R3	1			10 10		

#### COKE

Furnace, beehive (f.o.b.) No. 314.75 to	let-Ton \$15.50
Foundry, beehive (f.o.b.)	
Foundry oven coke	
Buffalo, del'd	.\$33.25
Ironton, O., f.o.b.	. 30.50
Detroit f.o.b.	. 32.00
New England, del'd	. 33.55
New Haven, f.o.b.	. 31.00
Kearney, N. J., f.o.b.	. 31.25
Philadelphia, f.o.b.	. 31.00
Swedeland, Pa., f.o.b.	31.00
Deinesville Ohie foh	32.00
Painesville, Ohio, f.o.b.	. 32.00
Erie, Pa., f.o.b.	. 32.00
St. Paul, f.o.b.	. 31.25
St. Louis, f.o.b.	. 33.00
Birmingham, f.o.b	. 30.35
Milwaukee, f.o.b.	. 32.00
Neville Is., Pa	. 30.75

#### LAKE SUPERIOR ORES

1	orts.	Inte	rim 1	rice	89		1	01	P	1	15	14	9	1 4	season.
-		-					-								ss Ton
															\$12.70
															11.85
(	old rar	Hge,	nonbe	88e1	ne	er						0	0		11.70
	Mesabi,														11.60
	Mesabi,			mer			0	0	0 0	0	0	0	0		11.45

#### **ELECTRICAL SHEETS**

22-Gage	Hot-Rolled	Coiled or Cut Length)					
F o.b. Mill Cents Per Lb	(Cut Lengths)*	Semi- Processed	Fully Processed				
Field	11.70	9.875	11.70				
Armature	12.40	11.20	12.40				
Elect	12.40	12.475	11111				
Motor		13.05	13.55				
Dynamo	14.65	14.15	14.65				
Trans. 72	15.70	15.20	15.70				
Trans. 65	16.30	Grain (	Driented				
Trans. 58	16.80	Trans. 80	19.76				
Trans. 52	17.85	Trans. 73 20.20 Trans. 66 20.70					

Producing points: Aliquippa (J3); Beech Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harbor (J3); Mansfeld (E2); Newport, Ky, (A49); Nilea, O. (SJ); Vandergrift (UI); Warren, O. (R3); Zaneaville, Butler (AI).

#### **ELECTRODES**

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

(	GRAPHITE		CARBON*							
Diam. (In.)	Length (In.)	Price	Diam. (In.)	Length (In.)	Price					
24 20 18 14 12 10 10 7 6 4 3 21/2 2	84 72 72 72 72 72 69 48 69 49 49 49 24	27. 25 26. 50 27. 50 27. 25 28. 25 29. 50 30. 00 29. 75 33. 25 37. 00 39. 25 41. 50 64. 00	40 35 30 24 20 17 14 10 8	100, 110 110 110 72 90 72 72 72 60 60	12.50 11.20 11.70 11.95 11.55 12.10 12.55 13.80 14.25					

• Prices shown cover carbon nipples.

#### REFRACTORIES

Fire Clay Brick	
Carloads	per 1000
Super duty, Mo., Pa., Md., Ky	
High duty (except Salina, Pa., add \$5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa.,	
add \$2.00)	103.00
Ground fire clay, net ton, bulk	22.50
Silica Brick	
Mt. Union, Pa., Ensley, Ala	\$158.00
Childs, Hays, Latrobe, Pa	163.00
Chicago District	. 168.00
Western Utah	. 183.00
California	. 165.00
Super Duty	
Hays, Pa., Athens, Tex., Wind	
ham, Warren, O., Morrisvill	
163.0	0-168.00

nam, warren, O., Morrisville	
163.00-1	68.00
Silica cement, net ton, bulk, Latrobe Silica cement, net ton, bulk, Chi-	29.7
cago	26.7
ley, Ala	27.7
Union Silica cement, net ton, bulk, Utah	25.7
and Calif	39.00
Chrome Brick Per ne	t to

Chrome Brick		Per	net	ton
Standard chemically Standard chemically	bonded,	Bal	t.\$109	9.00
iner, Calif Burned, Balt			. 119	9.00
Magnesite Brick				

# 

Grain Ma	gnesite St. % to 1/2-in. grains	
	f.o.b. Baltimore in bulk. \$73.00 f.o.b. Chewalah, Wash.,	
Luning.	Nev.	
in sacks	46.00 8	

Dead	Burn	ed	D	ole	on	n	i	h	2				Į	3	61	p	net	ton
F.o.b.	bulk W.																*1	6.75
· · Mis	souri	Va	11	ey		0		0				9.	0	0			1	5.60
Mid	west							4			٠			0	0		1	7.00

(Effective Dec. 14, 1959)

#### MERCHANT WIRE PRODUCTS

	Standard Q Coated Nails	Woven Wire Fence	"T" Fence Posts	Single Loop Bate Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galv.
F.e.b. Mill	Col	Col	Col	Col	Col	ė/lb.	¢/lb.
Alabama City R Aliquippa J3*** Atlanta A8** Bartonville K2**		187 198 192 192	178	212 214 214	190 198	9.00	9.55 9.675 9.425 9.775
Buffalo W6 Chicago N4** Chicago R3 Cleveland A6	173	190		212	196	9.00	9.55° 9.70 9.55
Cleveland A5 Crawf dav. M4** Donora, Pa. A5 Duluth A5	175 173 173	192 187 187		212	198 193 193	9.00	9.775 9.55 9.55
Fairfield, Ala. 72 Galveston D4 Houston S2	173 9.101 178	187		212	193	9 00	9.55
Jacksonville M4. Johnstown B3** Joliet, Ill. A5 Kokomo C9		197 190 187 189	177	212	203 196 193 195°	9.00	9.775 9.675 9.55 9.65°
L. Angeles B2*** Kansas City S2* Minnegua C6	178 178	192	187	217	198*	9.95	10.625 9.801 9.801
Monessen P6 Palmer, Mass. W6 Pittsburg, Cal. C7	192	210			193	8.65 9.30	9.325 9.85° 10.15
Rankin, Pa. A5. So. Chicago R3. S. San Fran. C6		187 187		236	193 193	8.65	9,55 9,20 10,50†
SparrowaPt. B3** Struthers, O. Y1* Worcester A5	175			214	198	8.65	9.775 9.20 9.85
Williamsport S5.		****					

\* Zinc less than .10¢. \*\*\* .10¢ zinc. \*\* 11-12¢ zinc. † Plus zinc extras. ‡ Wholesalers only.

#### C-R SPRING STEEL

		CARBON CONTENT											
Cents Per Lb F.o.b. Mill		0.41- 0.60		0,81- 1.05	1.06-								
Anderson, Ind. G4		10.40		15.60	18.55								
Baltimore, Md. 78		10.70		15.90	18.85								
Bristol, Conn. W/2			12.90	16.10	19.30								
Boston 78			12.90	15.98	18.85								
Buffalo, N. Y. R7			12.60	15.60	18.55								
Carnegie, Pa. S9				15.60	10.33								
Cleveland 45	8 65	10 40	12.60	15.60	18,55								
Dearborn S1			12.70		10.00								
Detroit D1			12.70	15.70									
Detroit D2			12.70	10.10									
Dover, O. G4			12.60	15, 68	18.55								
Evanston, Ill. M8			12.60	10.00									
Franklin Park, III. 78			12.60	15,60									
Harrison, N. J. Cll			12.90	16, 10	19.30								
Indianapolis R5			12.60	15,60									
Les Angeles C1			14.80	17.80									
New Britain, Conn. S7.,	9.46	10.70	12.90	15.90	18.85								
New Castle, Pa. B4		10.40	12.60	15.60									
New Haven, Conn. DI		10.70	12.90	15.90									
Pawtucket, R. I. N7		10.76	12.90	15.90	18.85								
Riverdale, Ill. Ai	9.03	10.4	12.60	15.60									
Sharon, Pa. S1			12.60										
Trenton, R4			12.90										
Wallingford W1			12.90										
Warren, Ohio 74			12.60										
Worcester, Mass. A5			0 12.90										
Youngstown R5	9.10	10.5	5 12.60	15.60	18.55								

#### BOILER TUBES

\$ per 100 ft, carload lots	Si	ize	Sean	Elec. Weld	
cut 10 to 24 ft. F.o.b. Mill	OD- in.	B.W.	H.R.	C.D.	H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.74
	21/2	12	54.23	63.57	48.13
	3	12	62.62	73.49	55.59
	31/2	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
National Tube	2	13	40.28	47.21	35.74
	21.5	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	31 2	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
Pittaburgh Steel	2	13	40.28	47.21	
	21/2	12	54.23	63.57	
	3	12	62.62	73.40	
	31/2	11	73.11	85.70	
	4	10	97.88	113.80	

#### **METAL POWDERS**

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

#### Iron Powders

-		۰			
C	omi	0.0	otino	Dow	doro

Electrolytic, imported, f.o.b		33.00 34.50 11.50
Atomized	to	11.25
Welding Powders*		8.10
Cutting and Scarfing Powders*		9.10

Copper Powders  Electrolytic, domestic  Precipitated  Atomized  Hydrogen reduced, f.o.b.	
Bronze Chromium, electrolytic Lead Manganese, f.o.b.	\$5.00 19.00 42.00
	\$1.05 to \$1.03 53.50 13.00
Solder	\$1.07
Stainless Steel   316   Steel   atomized   prealloyed   4600   series   14.00   pt   Tin   14¢   pt   Titanium   99.25 + %   per lb.   f.o.b.   Tungsten   \$3.	us metal value us metal value \$11.25

<sup>·</sup> F.O.B., shipping point.

#### BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Bolts	Con- tainers	Con- tainers	20,000 Lb.	40,000 Lb.
Machine				
1/2" and smaller x 3" and shorter 5%" diam. x 3" and	55	57	61	62
shorter	47	4934	54	55
6" and shorter thru 1" diam s	37	3934	45	46
longer than 6" and 11%" and larger x all lengths Rolled thread, 14" and smaller x 3"	31	34	40	41
and shorter	55	87	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	5014	55	56

Nuts, Hex, HP reg. & hvy. Full ca	se or rice
¾ in. or smaller         % in. to 1 ½ in. inclusive         1 % in. and larger	62 56 51 ½
C. P. Hex, reg. & hvy. % in. or smaller	62 56 51 ½
Hot Galv. Hex Nuts (All Types) % in. and smaller	41
Semi-finished Hex Nuts % in. or smaller % in. to 1% in. inclusive 1% in. and larger (Add 25 pct for broken case or h	62 56 51 1/2 ceg

			qua	135.55	168)				
Fir	nish	ed							
%	in.	and	smaller					65	
Ri	vets	5				Base	per	100	21

Cap	Scr	ews		Disc	cou	ne	(Pac)	cages)
Now	hto	F	ull Fin	pack-	H.	C.	Heat	Treat
age		nea	neau,	pack.		Fu	Il Case	9

7/16 in. and smaller .....

½ in. and larger ...... \$12.85 Pct. Off List

%" diam. and smaller x	54	49
%", %", and 1" diam. x		7.0
6" and shorter	38	23
%" diam. and smaller x		
longer than 6" %", %", and 1" diam. x	* *	
longer than 6"		
		C-1018 Ste

	Full-Finished Cartons Bulk	
4" through %" dia. x 6" and shorter	59 48	
and shorter	6" through %"	
diam., 5,000 pieces; %" tl 2,000 pieces.	hrough 1" diam.,	

#### Machine Screws & Stove Bolts

Discount
Mach. Stove Screws Bolts 60 60
antity
and over 60
200,000 60

#### Machine Screws & Stove Bolt Nuts

CTE

		Dis	count
In Cartons	Quantity	Hex 16	Square 19
diam. &	}25,000-and over	15	16

#### **ELECTROPLATING SUPPLIES**

# Anodes (Cents per lh irt allowed in quantity)

Copper
Rolled elliptical, 18 in. or longer, 5000 lb lots
Brass, 80-20, ball anodes, 2000 lb or more
(for elliptical add 1¢ per lb) Nickel, 99 pct plus, rolled carton, 5000 lb
Cadmium, 5000 lb

Chemicals	
(Cents per lb, f.o.b. shipping poin	t)
Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags Nickel chloride, freight allowed,	36.00
100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	24.70
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

Dill sili low ma 0.5 (Gi Ke Ad to ma pct sili

#### CAST IRON WATER PIPE INDEX

	111/0			-				
Birming	ham							125.8
New Yo	rk							138.5
Chicago								140.9
								148.6
Dec.	1955.	We.	alue	e. i	Clas	88	B of	r heavier
5 in. or	lara	e9°.	bel	l a	md.	api	ot 1	pipe. Ex-
planatio	n: n	).	57.	8	ept.	1.	19	55, isaue.
Source:	U. 8	p	ine	(3.9)	rd I	out	dry	Co.

E1	SERVICE	CENTERS	1
EL	SEKTICE	CEMIEKS	Metropolitan Price, dollars per 100 ft

erat		Sheets		Strip	Plates	Shapes	Be	IF8		Alloy	Bars	
City Delivery t Charge	Hot-Rolled (18 ga. & hvr.)	Cold-Rolled (15 gage)	Galvanized (10 gage)††	Hat-Rolled		Structural	Het-Rolled (merchant)	Cold- Finished	Hot-Rolled 4615 As relled	Hot-Rolled 4140 Annealed	Cold-Drawn 4615 As rolled	Cold-Drawn 4140
Atlanta	8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24				
Baltimore**\$.10	9.90	10.10	10.16	11.55	10.00	10.65	10.15	11.90	17.48	16.48	21.58	20.83
Birmingham**	9.43	10.20	10.46	10.91	9.79	10.00	9.59	13.14	16.76			
Boston**10	10.52	11.27	11.87	12.17	10.42	10.72	10.34	13.45	17.69	16.69	21.79	21.04
Buffalo**	9.80	10.50	11.40	11.30	10.25	10.40	9.90	11.60	17.45	16.45	21.55	20.80
Chicago**15	8.69	10.35	11.10	10.35	8.62	9.16	8.79	10.80	17.10	16.10	19.70	20.45
Cincinnati**15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68	17.42	16.42	21.52	20.77
Cleveland**15	8.691	9.89	11.09	10.47	8.88	9.67	8.90	11.40	17.21	16.21	21.31	20.56
Denver	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit**15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	17.38	16.38	21.48	21.03
Houston**	9.65	9.65		10.85	9.65	9.35	8.90	13.10	17.50	16.55	21.55	20.85
Kansas City15	9.82	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles**	9.951	11.55	12.20	11.55	10.00	10.00	9.10	14.20	18.30	16.45	21.30	20.80
Memphis15	8.55	9.80		8.60	8.93	9.01	8.97	12.11				
Milwankee**15	8.83	10.49	11.24	10.49	8.76	9.30	8.93	11.04	17.24	15.34	21.24	19.00
New York 10	9.27	10.59	11.45	9.74	9.87	9.84	10.09	13.35	16.16	15.60	20.10	19.35
Nerfelk	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia 10	8.30	9.35	10.99	9.35	9.25	9.20	9.50	12.05	16.58	15.58	20.08	19.33
Pittsburgh**15	8.69	9.84	10.91	10.45	8.62	9.78	8.79	11.40	17.10	16.10	19.70	20.45
Portland	10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30	18.50	17.45	20.75	20.25
San Francisco** .10	11.00	11.952	11.50	12.25	11.00	10.95	10.75	15.20	18.30	16.35	22.90	20.60
Seattle**	11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	18.60	17.80	22.70	22.20
Spokane**15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.58	22.35
St. Louis**15	9.07	10.73	11.48	10.73	9.00	9.76	9.17	11.43	17.48	16.48	21.58	19.33
St. Paul**15	8.95	9.46	10.62	10.47	8.75	9.48	8.85	11.64	******	16.69		21.04

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1600 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. All galvanized sheets may be combined for quantity. All galvanized sheets may be removed for quantity. These cities are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 gs. x 36 x 96—120; Cold-rolled sheet—20 gs. x 36 x 96—120; Cold-rolled sheet—20 gs. x 36—120; Hot-rolled sheet—3 x x 36 x 96—120; x x 36"; Shapes—1-Reams 6 x 12.5; Hot-rolled bar-Rounds—% -2 15/16; Cold-finished bar—C 1018—1" rounds; Alloy bar—hot-rolled d615—1% to 2%"; cold drawn—15/16" to 2%" round.

ff 10e zinc. 2 Deduct for country delivery. 2 15 ga. & heavier; 2 14 ga. & lighter.

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingets, reroll.	22.75	24.75	24.00	26.25	-	28.00	41.25	33.50	38.50	-	17.50	-	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	-	22.25	-	22.50
Billets, forging	-	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.56
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	-	44.25	69.25	\$3.50	63.50	-	31.00	-	32.00
trip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.7
Vire CF; Rod HR	-	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., 43; Butler, Pa., 47; Vandergriit, Pa., U1; Washington, Pa., W2, J2; Iltimore, E1; Middletown, O., 47; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., 12; Detroit, M2; Baltimore, El; Mi Louisville, O., R5.

Strip: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville Pa., U2; Detroit, M2; Detroit, S1; Canton, Massillon, O., R3; Harrison, N. J., D3; Youngstown, R5; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion extras); W1 (25e per lb, higher); Symour, Conn., S13, (25e per lb, higher); New Bedford, Mass., R6 Gary, U1, (25e per lb, higher); Baltimore, Md., E1 (300 series only).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., 12; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R5; S. Chicago, U1; Syracuse, N. Y., C1; Watervliet, N. Y., A3; Waskegan, A5; Canton, O., T5, R3; Ft. Wayne, 14; Detroit, R5; Gary, U1; Owensboro, Ky., G5; Bridgeport, Conn., N6; Ambridge, Pa., B1.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Newark, N. J. D2; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2; Detroit, R5; Reading, Pa., C2; Bridgeport, Conn., N8.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, CII; S. Chicago, UI.

Plates: Ambridge. Pa., B7; Baltimore, E1; Brackenridge. Pa., A3; Chicago, U1; Munhall. Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Ambridge, Pa., B7; Midland. Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Water liet. A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, U1; Owensbore, Ky, G5; Bridgeport, Conn., N8; Reading, Pa., C2.

(Effective Dec. 14, 1959)

Producing Point Basic Fdry. Mall. 68.50 62.50° 62.50° 66.50 66.50 66.50 66.50 66.50 66.50 66.50 66.50 66.50 66.50 Birdshoro, Pa. B6 Birmingham R3... Birmingham W9... 68.00 62.00 62.00 66.00 66.00 66.00 66.00 66.00 66.00 67.50 75.00 66.00 69.00 69.50 66,50 67,00 67,00 67,00 69,00 66,50 66,50 66,50 66,50 68,50 Buffalo #1.
Buffalo #1.
Buffalo #1.
Buffalo W6. 67.50 67.50 67.50 Chester P2
Chicago 14
Cleveland A5
Cleveland R3
Duluth 14
Erie 14
Everett M6 71.00 71.00 Erie 14
Everett M6
Fontana K1
Geneva, Utah C7
Granite City G2
Hubbard Y1 66.50 68.40 68.90 66.50 Hubbard VI Ironton, Utah C7 Midland C1/I Minnequa C6 Monessen P6 Neville Is. P4 N, Tonawanda T1 Sharpaville S3 So. Chicago R3 So. Chicago R4 Swedeland A2 Toledo I4 Trov, N, Y, R3 66.00 66.00 68.00 66.00 66.00 66.50 68.50 69.00 66,50 67,00 66,50 66,50 66,50 69,00 66,50 66.50 66.50 67.00 67.50 67.00 67.00 67.00 69.50 69.50 71.001 66.00 66.00 66.00 68.00 68.00 66.00 66.50 68.50 66.50 68.50 73,601 Troy, N. Y. R3 73.00

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, \$2 per ton for 0.50 to 0.75 pct nickel, \$41 for each additional 0.25 pct nickel. Add \$1.00 for 0.31-0.69 pct phos.

Add \$1.00 for ..., 13.00. spr pnol.

Silvery from: Buffalo (6 pct), H/, \$79.25; Jackson J/, 14

(Globe Div.), \$78.00; Niagare Falls (15.01-15.50), \$101.00;

Keokuk (14.01-14.50), \$103.50; (15.51-16.00), \$106.50.

Add \$1.00 per ton for each 0.50 pct silicen over base (6.01 to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct mannase over 1.00 pct. Bessemer silvery pig iron (under .10 pct. plous.); \$64.00. Add \$1.00 premium for all grades cilleges to 18.00. pct phos.); \$64. silvery to 18 pct.

† Intermediate low phos.

INDUSTRIAL AND ORNAMENTAL

# PERFORATED METALS

#### DESIGNED AND PRODUCED FOR EVERY PURPOSE

Steel, brass, copper, monel, bronze, aluminum, zinc, tinplate, lead, stainless steel, coated metals, bonded materials, plastics and paper punched as required and for all kinds of screens.

We can guarantee sheets that are perfectly flat, straight parallel on sides, and free from buckle or camber.

A tremendous variety of screens. Our modern tool and machine shop is constantly building new dies placing us in a position to construct special dies as conditions may

Metallurgical and design assistance.

#### CHARLES MUNDT & SONS 53 FAIRMOUNT AVE. JERSEY CITY 4, N. J.



Write for free catalog

PERFORATION SPECIALISTS OF ALL TYPES OF MATERIALS



# produces DIE CASTINGS

automotive industry has called an Kutztown to supply Ductile I ron die castings to meet their designs and specifications. The one shown here is one of the largest we supplied. It was made in a dry sand mold in a 12' x 13' flask. In this case, as in many others, our B & P motive speed slinger was used. This helps to insure better casting surfaces. We have also made much smaller die castings, some of Cast smaller die cast-ings, some of Cast Iron and others of Ductile Iron.



Weighs over 19 tons.

SEE OUR AD IN CHEMICAL ENGINEERING CATALOG

We'll be happy to place your name on our mailing list to receive regular issues of the "Kutztown REVIEW".

GRAY IRON . PRESSURE IRON . HIGH TENSILE IRON . LO-ALLOY IRON . NI-RESIST . NI-RESIST DUCTILE IRON . DUCTILE IRON

KUTZTOWN FOUNDRY & MACHINE CORP. KUTZTOWN 29, PENNSYLVANIA

# RAILWAY EQUIPMENT

FOR SALE Used "As Is" and Reconditioned

> RAILWAY CARS All Types

SERVICE-TESTED

FREIGHT CAR REPAIR PARTS

For All Types of Cars

#### -DIESEL-ELECTRIC LOCOMOTIVES

General Electric Standard Gauge In ICC Operating Condition

10 Covered Hopper Cars 70-Ton Capacity, Standard Gauge

RAILROAD TRACK SCALE 125 Ton, 52'6", Buffalo

RAILWAY TANK CARS and STORAGE TANKS

6,000- 8,000- and 10,000-Gallon Cleaned and Tested

IRON & STEEL PRODUCTS, INC.

General Office 13496 S. Brainard Ave. Chicago 33, Illinois Phone: Mitchell 6-1212

New York Office Suite 1608-9, 51-B E. 42nd St. New York 17, N. Y. Phone: YUkon 6-4766

"ANYTHING containing IRON or STEEL"

# REBUILT-GUARANTEED **ELECTRICAL EQUIPMENT**

STEEL MILL SPECIALS

- (2)—3000-HP Whse. Motors, 600-V.D.C., 600 R.P.M. (in fandem, encl. F.Vent.) (1)—2200-HP Whse. Motor, 600-V.D.C., 92/132 R.P.M., enclosed, F.Vent. (4)—700-HP Whse. Motors, 250-V.D.C., 300 700 R.P.M., enclosed, F.Vent. (2)—645-HP S.S. Motors, 300-V.D.C., 1000 R.P.M., enclosed, F.Vent. (2)—600-HP Allis-Chalmers Motor, 600-V.D.C. 300/600 R.P.M., mill type.

We can supply suitable Motor Generator Sets with any of the above.

(1)—1875 K.W Whse, motor generator set 250 V.D.C. with 2700 HP., motor 13800/6900 V. and control.

(1)—2500-HP 296 R.P.M. Allis-Chalmers slip ring motor, 2200-V., 3 ph., 60 cy. (1)—1800-HP, 252 R.P.M. Whse, slip ring motor, 2300-V. 3 ph., 60 cy. (3)—1500 HP, 444 R.P.M. General Electric slip ring motors, 6600/4160-V., 3 ph., 60 cy.

\* \* \* \* \* \* \*

(1)—1250-KVA Whse. Hi-Cycle Frequency Set, 800-V., 960 cycle with 1875-HP syn. motor, 2300-V., 3 ph., 60 cy. with all switchgear.

# T. B. MAC CABE COMPANY

4302 Clarissa St., Philadelphia 40, Penna.

Cable Address Phone "Macsteel" Philadelphia, Pa. Davenport 4-8300

#### THE CLEARING HOUSE

# **Used Machine Sales** Climb in Chicago

Chicago area dealers report sales are again starting to climb following the steel strike lull.

However, some buyers are awaiting a final outcome of the steel situation before making any big buys.

 Used tools in the Chicago-Midwest area are moving up slightly. In a slump that many dealers now concede hit its low in September, both used and rebuilt equipment appear to be pulling up slightly.

Most dealers are cautious in their forecasts. The year ahead looks good, but defense cutbacks began to affect tool sales in the Chicago area last week. And offers of foreign tools at reportedly lower prices have caused some concern.

Inquiries Up—On the credit side: Sales of tool room equipment, grinders, lathes, presses and press brakes appear to be moving up. Rebuilders, reporting no great increase in backlogs, find their inquiry rate stepping up. There is no doubt that a number of firms have marketed more dollars worth of used and reconditioned tools in the first weeks of December than they did in the similar October period.

Again, on the credit side, some firms are stepping up their direct mailings, and are getting an unexpectedly quick return. One dealer reports sending out his catalogue only days ago and already getting responses. His feeling: His normal December slump appears to be turning into a hump. Customer money held back during the steel strike is going to be spent in December and January.

CRA

DR

Liq

More Stock-A third item on the credit side: A number of dealers are quietly boosting inventory. The fact that they are doing it in a market where pricing never went very soft, argues they expect to sell these additional tools soon.

On the debit side of the ledger: A few tool dealers received word that some proposed purchases were being cancelled. The buyer had received a cutback on a defense order. And a few customers indicated that, until they are really sure that the steel strike is ended after expiration of the Taft-Hartley injunction. they'll sit on their pocketbooks.

Despite the strong cross-currents of opinion in the Midwest tool market, the stronger trend seems to be shaping up as follows:

Unconfirmed Reports—The steel strike hasn't hurt purchases too badly. Buyers went dead in September, but were beginning to come out as early as October. As more plants get back into operation, they'll step up some strike-delayed purchases. This will be additional business stacked on top of the usual first-quarter upswing. All this adds up to an outlook that isn't disturbing the average tool dealer

Reports of an attempt to dump some foreign tools in the Midwestern market at depressed prices can't be confirmed. Price-cutting on foreign tools seems to have been confined to the September-October period. As demand began to stiffen, so did pricing.

# CONSIDER GOOD USED EQUIPMENT

500-56 Bender, with Hydr. Mandrel Ex-Unit-NEW

tractor Unit—NEW
BENDING ROLLS

10° x 10 Ga. Bertsch Initial Type
13° x 3/16° Bertsch Initial Type—New 1957
20° x ½" Niles Pyramid Type—New 1942
23° x ½" Kaldwin Pyramid Type—New 1942
BRAKES—PRESS TYPE
90 ton Niagara, Model 90-8-10
500 ton Cincinnati, Capacity 12° x ½"

500 ton Cincinnati, Capacity 12' x 78

CRANE—OVERHEAD ELECTRIC TRAVELING
56' 8" Span 220/3/60 A.C. 

72" McKay Leveler, Rolls 8" Dia.. Complete with 6' x ½" Shear, Cradle, Tables

DRAW BENCHES

PRAW BENCHES
7,000 lb. Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
30,000 lb. Draw Bench, 41 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw

FLANGING MACHINE FORGING MACHINES

1" to 5" Acme. Alax. National HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING to 22,000 lbs.

LATHES-ENGINE x 23' Monarch 80" x 40' Heavy Duty—LATE LEVELERS—ROLLERS 24 Torrington 9 Rolls 8 Dia. 60" Guide 17 Rolls 4½ Dia. 72" Niles 7 Rolls 9" Dia. NIBBLER Pullmar Manuel Pu

NIBBLER
Pullmax Model 2. Capacity 11/32"
PRESS—FORGING
2000 ton National High Speed Maxipress #6

2000 ton National High Speed Maxipress 26
PRESSES—HYDRAULIC
300 ton Southwark Platen 28" x 28", Stroke 25"
400 ton Baldwin Southwark Horiz. Automatic Reversing Hydr. Press. 24" Stroke, 38 ½" Bet. Columns 500 ton Watson Stillman Piercing Press, 48" x 72"
500 ton HPM, 14" Stroke, 28" x 38" Bed.
1000 ton Southwark Bed 44" x 54", Stroke 20"
Model F-1200-42 Clearing, 30" Stroke, 42x42" Bed.
4300 ton B-L-H Bed 68" x 68", x 18troke 40"

PUNCH & SHEAR COMBINATION випаю Ironworker & Notcher, Punch 1"π7/4", Shear, 2½"Rd.2"Sq. EF Cleveland Single End, 42" Throat —FORMING

Style EF Cleveland Single EDd, 42" Throat ROLLS—FORMING 8 Stand, Tishken 7%" C to C of rolls Spindle 2%" Dia. 7 Stand, Yoder, 38" Roll Space, 3" Dia. Spindle 14 Stand, Tishken, 34" Roll Space, 2½" Dia. Spindle ROLL FORMING MACHINE TOOLING
Metal Floor & Roof Deck Forming Rolls—NEW, For
any standard machine with 3" or 3½" spindle

ROLLING MILLS
Threadwell Ring Rolling Mill for 7" wide strip
10" x 10" Single Stand Two High
10" x 14" Single Stand Two High
13" x 16" Single Stand Two High
16" x 24" Two Stand Two High
16" x 24" Two Stand Two High
26" x 60" Single Stand Two High

26" Single Stand Two High—Modernized 28" Single Stand Two High 32" Birdsboro, 3-Hi Bar Mill 40" Lewis 3-Hi Sheet Mill -PLATE STRAIGHTENING CKN 9 Bolls 13" Iba Backed up. 72" McKay 9 Rolls 15" Dia. Backed-up 99" McKay 9 Rolls 15" Dia. Backed-up SCRAP CHOPPER #2 Yoder, 4" Lawn Mower Rotary Type Scrap Chopper SHEAR—GATE #2 Yoder, 4" Law #2 Yoder, 4" Law SHEAR—GATE a' x 1" Wood Hydraulic SHEAR—way.

\*\* x 1" Wood Hydraum.

\*\* x 1" Wood Hydraum.

\*\* x % Beatty No. 29

SHEARS, MISC.

60" x 10 Ga. Cut-off Line

84" x 3/16" United Up-Cut, 50 H.P. A.C. Motor Drive

SHEARS—ROTARY

No. 23A Quickwork Whiting 3/16 Capacity

No. 30A Quickwork Whiting %" Capacity

SHEARS—SQUARING

6 x 14 Ga.

10 x 14 Ga.

Shipley

\*\* Shipley

SHEARS—SQUARING
6' x 14 Ga. Edward, Motor
10' x ½" Cincinnati
12' x ½" Lodge & Shipley
10' x ½" Niagara No. 910
SLITTERS

SLITTERS
36" Waterbury Farrel, Slitting Line, Arbor 4½" Dia.
STRAIGHTENER
Torrington #1734 12 Roll. Cap. 1%" Rd., 1-9/16"

Sq. etc.
SWAGING MACHINE
#64A Fenn 2-Die Capacity 3%" Tube, 1%" Solid
10" Die Length, Hydraulic Feed
TESTING MACHINES

20,000 and 60,000 = Universal Hydraulic 50,000, 100,000, 200,000 = Univ. Beam Type TUBF REDUCER 116." Street

1 %" Standard
TUBE OR PIPE MILLS
Yoder Induction Weld Pipe Mill. 2" to 8"—LATE
McKay Electric Weld Tube Mill. ½" to 1¼"—LATE

Manufacturing

Confidential Certified Appraisals Liquidations - Bona Fide Auction Sales Arranged

# A. T. HENRY & COMPANY, INC.

50 CHURCH ST., NEW YORK CITY B

Telephone COrtlandt 7 3437

Consulting Engineering Service Surplus Mfg. Equipment Inventories Purchased

#### FOR SALE

By

# STRUTHERS WELLS CORP. MACHINE TOOLS

I—Betts 100" Heavy Duty Vertical Boring Mill Ser. E5159-25, 96" Table, 78" Under Rail, Table 3.6/33.6 RPM, 40 HP D.C.

Portage #4 Horizontal Boring Mill, Ser. No. 3442, 36" x 60" Table, 17/611 Spindle RPM, Tailstock, 15 HP A.C.

I-Cincinnati 28/120 Harizontal Hydrotel Milling Machine Ser. 40M-318256-1

I—Stoker, Combustion Engineering Type E, Class 10, underfeed, 8'-43'4" wide x 10'-4" long, steam driven. Spare parts included. Used only four months.

#### CRANES

I—10 Ton P&H O.E.T. CRANE, cab operated. Serial 10422, lift 14'-11", span 39'-01/2", 3 motors, 230 volt D.C.

I-71/2 Ton SHAW O.E.T. CRANE, cab operated, Serial 2416, 31/2 ton auxiliary hoist, lift 34'-1'', span 40'-034'', 4 motors, 230 volt D. C.

I-5 Ton SHAW O.E.T. CRANE, cab operated, Serial 1436, Lift 11'-2", span 31"-81/2", 3 motors, 230 volt D.C.

ALL THE ABOVE IN GOOD TO EXCELLENT CONDITION MAY BE INSPECTED UNDER POWER

Write-Wire-Phone

# STRUTHERS WELLS CORP.

TITUSVILLE, PENNSYLVANIA

# Keep 'em rolling . . . not rusting

#### FOR SALE

New-Used-Reconditioned railroad freight cars . car parts . locomotives • tank cars • steel storage tanks.

#### MARSHALL RAILWAY EQUIPMENT Corporation

328 Connell Building, Scranton 3, Pennsylvania Cable MARAILQUIP Diamond 3-1117

# FOR SALE OR RENT

50 Ton American Diesel Locomotive Crane. New 1944. Caterpillar D-17000 Engine. 15 KW Magnet Generator.

1000 HP Alco Diesel Electric Switcher Loco-motive. New 1945. Modern-excellent. ICC Equipped.

44 Ton Gen. Elec. and Whitcomb Diesel Elec. Locomotives. 4 Traction Motors. Heavy Duty.

30 Ton Browning Diesel Loco. Crane.

60 Ton Link-Belt K-595 Lifting Crane. 120' Boom. Cat. D-17000 Diesel.

#### WHISLER EQUIPMENT CO.

1910 Railway Exchange Bidg., St. Louis 1, Mo. CHestnut 1-4474

# **eastern** Rebuilt Machine Tools THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

SAWS

SAWS

No. 4B Robertson Economy, m.d., new
No. 4XB Robertson Economy, m.d., new
No. 32B Cochran Bly Saw, m.d., latest
Model 102, Type JcAW, Cincinnati Elec. Tool &
Abrasive Cut-off, m.d.
Model 401 Cutomatic Abrasive Cut-off, m.d.
6x6" Peerless High Duty Hydraulic Standard, m.d.
10"x10" Peerless Hydraulic Power Hack Saw, m.d.

SHAPERS

SHAPERS
6" Pratt & Whitney M1506, Model B Vertical
12" Rockford Universal Hydraulic, flanged m.d.
124" Gemo Standard Duty Universal, m.d.
24" Gemo Standard Duty Universal, m.d.
24" American Standard Pattern Auto-Oiled Plain
Shaper, m.d.
24" Rockford Hydraulic, m.d.
22" Morton Draw-Cut, m.d., late
32" Cincinnati, m.d., late
32" Cincinnati, m.d., late
32" Morton Punch Cut Shaper, m.d.
48" Morton Punch Cut Shaper, m.d.
48" Morton Heavy Duty Traveling Head, m.d.

SHEET METAL MACHINERY
No. 356" capacity Savage Sheet Metal Cutter, m.d.
No. 11-SBC Buffalo Armor Plate Bar Cutter, m.d.
Model 1236 Libert High Speed Nibbler Type Shear,

m.d. No. 5 Hilles & Jones Pyramid Type Bending Roll

Model U1144B Pexto Underdriven Power Squaring Model SP Dreis & Krump Hand Type Box and Pan

Brake 8' x 10 gauge Pexto Shear, m.d.

SLOTTERS 18" Niles-Bement, s.p.d. 20-24" Pattern Dill, m.d. 20" stroke Rockford, m.d. 22" Betts, m.d. 48" Niles, m.d.

TAPPERS

No. 1 Bakewell. m.d., late No. 10 Model 2100 Warner & Swasey Bench Model,

PROFILERS 12B Pratt & Whitney Model 1693, 2 spindle, 1944

1944 No. 12M Morey, 2 spindle m.d., 1943 4 spindle 360° Cincinnati Automatic, m.d., 1944 30 capacity 2 spindle Pratt & Whitney Vertical Miller & Profiler, Model 1482 Model BL 2416 Pratt & Whitney Keller Type, m.d.

PUNCHES & SHEARS

No. 5 Hilles & Jones Punch & Shear, single end, type "G"

No. 7 Thomas Vertical, latest

We carry an average stack of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times

# THE EASTERN MACHINERY COMPANY

1002 Tennessee Avenue, Cincinnati 29, Ohio MElrose 1-1241 CABLE ADDRESS-EMCO

# UNIVERSAL Machinery & Equipment Co.

#### AMERICA'S LARGEST STOCK OF FOUNDRY EQUIPMENT

ARC MELTING FURNACES
1-250# LECTROMELT-185 KVA
1-500# LECTROMELT-200 KVA

1—500# LECTHOMELT—200 KVA
1—2000# SWINDELL—400 KVA
1—2000# SWINDELL—1000 KVA
1—3000# HEROULT, Door Charge
1—5000# LECTROMELT, Door Charge
1—3 ton SWINDELL Top Charge—Late
1—5 ton SWINDELL Top Charge—500 KVA
DETROIT FURNACES—10 lb. to 3000 lb. Cap.

INDUCTION FURNACES

1—20 KW AJAX Spark Gap 17# Melting 1—30 KW VACUUM Melting. Complete—Like New 1—750 KW INDUCTION 1 ton capacity 1—1250 KW AJAX—Unit

HEAT TREAT FURNACES

1060 Broad St.

slabs and coils.

2220 Oliver Bldg.

1-4/x4/x10' Gas Fired Box
1-4/x4/x10' Gas Fired Box
1-10"Hx24"Mx50"L double door 1750°F. Gas
1-12"x36"x8" HAYES Hardening 40 KW
1-7' G. E. Rotary Hearth Electric, 1900°F.
CLEANING EQUIPMENT AND GRINDERS
1-15x20 WHEELABRATOR

LIFTING MAGNETS

A complete magnet service. Magnets, new & rebuilt, generators, controllers, reels, etc.

Magnet specialists since 1910

Newark 2, N. J.

Pittsburgh 22, Pa.

Goodman Electric Machinery Co.

2-HIGH COLD MILLS

1-24" x 36"

1-22" x 36"

Each with A.C. motor, gear, reducer, pinion stand and forged steel rolls. Roller conveyor system for

FRANK B. FOSTER, INC.

ATlantic 1-2780

1—27x36 WHEELABRATOR w/loader collectors
1—36x42 WHEELABRATOR w/loader collectors
1—48x42 WHEELABRATOR w/loader available
1—48x48 WHEELABRATOR Swing Table machines
1—24 wheelabrator No. 1-A Multi-Table
1—PANGBORN TABLAST, 6' LK Table Room
1—PANGBORN TABLAST, 8' Table, 2500#
1—SAFETY 10 H.P. Swing Gridder
1—WHITING 26"x54" tumbling barrel

. . . SPECIAL . . .

125 Ton HYDRAULIC PRESS, Down Moving Ram

New Wheelabrator Structural Steel Cleaning Cabinet—ideal for cleaning up to 12" WF. Channel, Angle Iron. Complete with Dust Collector and all Electrics.

10,000# SOUTHWARK Hyd. Test Machine 500 KW—230 V. Motor Gen. New 1953 30 KW TOCCO Induction Hardening Unit—Late 3000 Kq. BRINELL Hardness-Tester

1630 NORTH NINTH ST. READING, PA. PHONE FRANKLIN 3-5103

#### IMMEDIATELY AVAILABLE

# 3 LEE WILSON RECTANGULAR

atmosphere-controlled with 9 bases, are available. Each is approximately 7' x 7' x 14'. Excelent when used for manufacture of steel colls, they have a capacity of 50 tons per charge. These top-grade furnaces are still set up in the plant. Tremendous values specially priced for prompts set.

## NATIONAL MACHINERY EXCHANGE

126 Mott St. New York 13, N. Y. CAnal 6-2470

Because of Mill Consolidation

**BELL-TYPE ANNEALING FURNACES** 

GUARANTEED-RE-NU-RILT

#### Electric Power Equipment - A. C. Motors

# 3 phase—60 cycle

		3F1	r KING		
Qu.	H.P. 1750 1500	Make G.E. G.E.	Type M-579BS MT	Volts 4800 6600	Speed 1800 1187
1	800	Whse.	CW	550	1776
1	700	A.C.		2300	500
1	500	Whse.	CW-4-32I		1778
î	500	G.E.	MT-412	2200	439
1	500	Whse.	CW	550	350
1	300	G.E.	MTP-561	2200	1800
1	200	G.E.	IM	440/2200	589
1	125	G.E.			
		unused	MT-557	220/440	1200
1	100	G.E.	MT-564	440/220	450
3	250	G.E.	IM-16	220/440	875
1	250	A.C.	ANY	550	600
1 1 1 2 2 3	250	Cr.Wh.	Size 29Q	2300	350
1	250	G.E.	MT-424Y	4000	257
1	250	G.E.	1E-13B	220	1800
2	200	Whse.	CW-890	2300	1775
9	200	G.E.	IM-17A	2200	435
3	100	A.C.		440	695
		SQUIRE	REL CAGI	E	
1	800	G.E.	KT-573	2200	1180
1	500	G.E.	FT-559 A	Y 2200	3600
2	500	Whse.	CS-1115	3300	863/445
2 4	500	Whse.	CS-1216	2200	500
1	450	E11.	F-3910	2200	1200
1	400	Whse.	CS-7151-		
				6600/4000	3585
1	300	Whse.	CS-1002	2300/440	600
1	250	Whse.	CS-875S	2200	1775
1	200	Whse.	CSP-581S	440	3450
2	200	Whse.	CS-855S		Zamon
			D.P.	220/440	1750

		SYNCH	RONOUS		
1	6000	G.E.	ATI .8 P.F. 2200	0/6600	600
1	3500	G.E.	TS 1.0		
1	2000	G.E.	P.F. 4600/	2300	360 900
2	1750 1750	G.E. G.E.	ATI TS 230	2300	3600
1	700	G.E.	TS .8P.F.	2300	1200
1	350 350	Whse.	1.0P.F. ATI 1.0P.F.	440 2300	900
ĩ	325	G.E.	ATI 1.0P.F.	140	1800
2	300	El Mach.	BRKT	2200	1200

CS CS-764C CS-760C

#### BELYEA COMPANY, Inc.

47 Howell Street, Jersey City 6, N. J. Tel. OL 3-3334

**BOUGHT & SOLD** 

ENGINEERED TO YOUR REQUIREMENTS

# Ornitz Equipment Corp.

Industrial Engineering Service 595 Bergen St. Brooklyn 38, N. Y.

NEvins 8-3566



#### 25 & 45 T. G.E. DIESEL **ELECTRIC LOCOMOTIVES**

New '40-44. Used six mes. by govt. Like new condition 300&150 HP Cummins engs. REASONABLE CALL NOW

EVEREADY

BOX 1780: BRIDGEPORT, CONN. EDison 4-9471-2

# Lou F. Kinderman

P. O. Box 182, Niles, Ohio Olympic 2-9876

#### FOR SALE

- I—Two Stand, 3 High MacIntosh-Hemphill Billet Mill with some accessories, no motors or electrical.
- I-30" x 144" Landis Roll Grinder
- I—2 High, Standard Engineering Co. 9" dia. x 8" Face Rolling Mill.
- 2—Penna. Engineering Co. Car Bottom Anneoling Furnaces, Chambers 32' long x 6'3" doors.
- -Pair of 35", 2 High Blooming Mill Housings with shoe plates, open tops, pinion stand and some accessories.

# WORLD'S LARGEST STOCK STAMPING PRESSES

SQUARING SHEARS . PRESS BRAKES REBUILT and GUARANTEED

WILL LEASE WITH OPTION TO PURCHASE, OR WILL FINANCE OVER LONG TERM

JOSEPH HYMAN & SONS Philadelphia 34, Pa. Phone GArfield 3-8700

#### COMPRESSORS

Rebuilt by American Air

7 CFM 1500 psi 64/4-34/2-15/6 x 7 CP TCB3

0 CFM 125 psi 6 x 7 Ing. or Worth.

4 CFM 2500 psi 64/4-44/4-1-11/10 x 9 ing. ES3

8 CFM 100 psi 7 x 7 Ing. ES-1

1 CFM 300 psi 7 x 7 Ing. ES-1

1 CFM 300 psi 9-4/4 x 9 ES-2

4 CFM 100 psi 9 x 9 Ing.—Worth.

8 CFM 500 psi 10-4/4 x 10 Ing.

1 CFM 300 psi 10-4/4 x 10 Ing.

1 CFM 300 psi 10-4/4 x 10 Ing.

5 CFM 100 psi 10 x 9 Ing.—Worth.

8 CFM 500 psi 10-4/2 x 10 Ing.

5 CFM 100 psi 10 x 9 Ing.—Sull-W13

5 CFM 100 psi 12 x 11 Ing.

5 CFM 100 psi 12 x 11 Ing.

5 CFM 100 psi 12 x 11 Ing.

6 CFM 100 psi 15-9/4 x 12 Ing. 3-60-4160

8 CFM 100 psi 15-9/4 x 12 Ing. X RE

5 CFM 100 psi 15-9/4 x 12 Ing. X RE

5 CFM 100 psi 18-11 x 14 Penn DB2

5 CFM 100 psi 18-11 x 14 Penn DB2

5 CFM 100 psi 18-11 x 12 Ing. X RE

5 CFM 100 psi 18-11 x 12 Ing. X RE

5 CFM 30 psi 18-11 x 12 Ing. X RE

6 CFM 30 psi 18-11 x 12 Ing. X RE

6 CFM 30 psi Henn. DE1-19-19 x 14

0 HP EM Sym Motor 3-60-2300

1able—Gas-dieset 60°-600° Rebuilt by American Air

## AMERICAN AIR COMPRESSOR CORP.

# R.R. EQUIPMENT HOPPER TANK CABOOSES FLATS GONDOLAS BOXES AND SPECIAL DESIGNS WE WILL REBUILD TO YOUR SPECIFICATIONS OR BUILD NEW AS REQUIRED RAIL & INDUSTRIAL EQUIPMENT CO. Inc. 30 CHURCH STREE

Rolling Stock

THE CLEARING HOUSE

SALE or LEASE All types of freight cars Large or small quantities

500 Ton 100" x 48" Bed Area Tie Rod Friction Clutch Twin Drive Double Geared Double Crank

19" Stroke 30 H.P. 220/440/3/60 V-belt M.D.

Inspection Under Power

LANG MACHINERY COMPANY, INC. 28th St. & A.V.R.R. Pittsburgh 22, Pa. Investigate exclusive Karge Turnomat One Pass Centerless Turning Method. Ten to twenty times faster than centerless grinding , unlimited lengths . undercuts . . . contours . . tapers, etc. Bar stock diameter range "/a" to 31/2". Write for full information to:

Contract Dept.

TURNOMAT CO., INC. BROCKPORT, NEW YORK

#### MORRISON RAILWAY SUPPLY CORP.

Speedy service on repairs or

reconstruction of your own cars in our Buffalo, N. Y. Shops

814 Rand Bldg. Buffalo 3, N. Y.

#### MACHINES FOR YOUR YARD

24G Pioneer Feeder Pioneer 30" x 15" conveyor Barber-Greene bucket loader 30x73 Barber-Greene conveyor Agricat hi-lift w/dozer blade Arps trencher on Ford tractor

TRACTOR & EQUIPMENT CO. 10005 Southwest Highway, Oak Lawn, III.

Sale Or Rent LOCOMOTIVES (3) 25 & 45-Ton Diesel Electric LOCOMOTIVE CRANE
(1) 30-Ton Browning Diesel

B. M. WEISS COMPANY Girard Trust Bldg., Philadelphia, Pa

AUTO. HYDR. CUTOFF SAW

Cochrane-Bly #31A Ferrous & Non Ferrous Tochrane-Bly #31A Ferrous & Non Ferrous Blade Dia 22/2," 20 HP AC Main Motor, Carriage Feed, Vise & Stock Feed. All Hydraulic. Serial 31-41-A. Latest, Like New Condition.

ndition. New Price \$16,000. Our Price \$2250 Net BOND INDUSTRIAL MACHINERY CO. 549 Atlantic Ave., Brooklyn 17, N.Y. Main 4-5544

#### FOR SALE

96" x 96" x 26' GRAY PLANER TYPE MILL, 3 75 HP HEADS. NEW 1958.

BOX G-990 c/o The IRON AGE, Chestnut at 56th, Phila. 39

# BRIDGE CRANES

ARNOLD HUGHES COMPANY 2765 PENOBSCOT BLDG. DETROIT, MICH. WOodward 1-1894

OVER 1,000 NEW AND USED MACHINE TOOLS IN STOCK WRITE FOR LATEST STOCK LIST

ES MACHINERY COMPANY

2041 EAST GENESEE + SAGINAW, MICH. PL. 7-3105

## FOR SALE

#### PUNCH AND SHEAR

Single End, Throat 48", Punch: I" hole in I" mild steel plate. Shear: 6" x I" flat bar, 13/4" round stock, 4 x 4 x 3/8" angle. Motor data: 5 HP, 230 volts, DC, 950 RPM. Mfr. New Doty Mfg. Co.

Condition Good

#### **Eastern States Steel Corporation**

36 Cook Street, East Bridgewater, Mass. Telephones JUniper 3-0910 Liberty 2-0667

## FOR SALE

525 TON MECHANICAL PRESS Double geared, double crane, straight side Bed  $24^{\prime\prime} \times 120^{\prime\prime}$  Stroke  $20^{\prime\prime}$ **Excellent** condition New 1955 Never used for production

#### ROCKWELL-STANDARD CORPORATION

2600 East Fifth Avenue, Gary, Indiana

## EQUIPMENT AND MATERIALS WANTED

#### WANTED TO PURCHASE Metalworking or

fabricating plant REPLIES CONFIDENTIAL

Mr. W. B. WEISS, President
WEISS STEEL CO., INC.
600 W. Jackson Blvd., Chicago 6, III.

# LARGEST BUYERS

OF SURPLUS STEEL Structurals — Pipe — Tubing

CALUMET

IRON & SUPPLY CO. 175 W. Chicago Ave., East Chicago, Ind

One press or entire stamping or forging

plant. Write or phone in confidence.

Wender Presses Inc. TRinity 2-1270 1959 Clay Ave., Detroit 11, Mich.

### BRIDGE CRANES ARNOLD HUGHES COMPANY 2765 PENOBSCOT M.DG. DETROIT, MICH.

description with reply.

417 So. Hill St.

WANTED-SCRAP IGSTEN CARBIDE THE SHWAYDER CO.

FORGING PRESS WANTED

1000 to 2000 ton hydraulic forging press

with steam intensifier. Please give full

GENERAL ORE & CHEMICAL CORP.

WANTED

684 E. Woodbridge Detroit 26, Mich. WO 1-4946

#### SURPLUS STEEL

WANTED

USED Structurals, Plate, Pipe and Tubing

Consumers Steel & Supply Co.

P. O. Box 270, RACINE, WISCONSIN

## WANTED SURPLUS STEEL WALLACK BROTHERS

7400 S. Damen Ave. Chicago 36, Illinois GROVEHILL 6-7474

# WEISS STEEL CO. INC.

Los Angeles 13, Calif.

600 WEST JACKSON BLVD. CHICAGO 6, ILLINOIS

Buyers of Surplus Steel Inventories

THE IRON AGE, December 17, 1959

# OLSON

# SCREW MACHINE **PRODUCTS**

Made to your specifications and tolerances. From smallest up to 25/8" diameter in steel, brass and aluminum.



# OLSON MANUFACTURING CO.

101 Prescott St., Worcester, Mass.



. . a specialty in our MEEHANITE® foundry. We can handle any size casting from 5 to 26,000 pounds, rough or machined to your specifications. (MEEHANITE\* properties lie between cast iron and steel.)

PIT-MOLDED CASTINGS

Our shops are also equipped for:

- LARGE PATTERN MAKING
- HEAVY PLATE STEEL FABRICATION
- MACHINE SHOP FACILITIES
- PRODUCTION AND ASSEMBLY OF CUSTOM-BUILT MACHINERY

## HARDINGE MANUFACTURING CO.

240 Arch Street York, Pennsylvania

Phone 33821

# Nepsco

## **NEW ENGLAND** PRESSED STEEL COMPANY

Contract Manufacturer since 1914

METAL STAMPINGS SPECIALTIES-APPLIANCES

For Industrial and Domestic Users

P. O. BOX 29

NATICK

MASSACHUSETTS

# THE FORMULA:

Multi-operation presses plus

Yankee skilled workmen over Eighty years manufacturing

know-how equals Low cost metal stampings And precision assemblies To meet your needs

The GREIST MANUFACTURING CO.

646 Blake St., New Haven 15, Conn.

# Cast to Shape Die Inserts

For forging-diecasting and extrusion dies - hot work tools and punches. Also stainless steel glass molds and details. Have limited vacuum casting facilities for special applications. Attractive territories now open for established Manufacturers Representatives to cover above line.

VAC-ALLOYS, INC.

17695 Filer Street Detroit 12, Michigan

## **SPECIFY** MEEHANITE CASTINGS

# FOR MAXIMUM SERVICE

SPECIAL TYPES FOR RESISTANCE TO ABRASION . HEAT . WEAR . CORROSION AS CAST OR MACHINED. Weights: 1-60,000 lbs.

## ROSEDALE

FOUNDRY & MACHINE CO.

1731 Preble Avenue Pittsburgh 33, Pa. Telephone CEdar 1-4007



# DROP FORGINGS

Small drop forgings up to one pound in size. Inquiries invited for very prompt action.

#### KEYSTONE FORGING COMPANY

Northumberland

Pennsylvania

GReenwood 3-3525

# DROP FORGINGS

To Your Specifications Prompt Quotations BALDT ANCHOR CHAIN & FORGE DIVISION P. O. Box 350-Chester, Pennsylvania

#### DROP FORGINGS

Special Forgings—High Quality, Fast Delivery. For prompt attention phone or send prints to John Bello.

#### CARCO INDUSTRIES, INC.

7341 Tulip Street, Phila. 35, Pa. DEvanshire 2-1200



#### METAL STAMPINGS

Send your blueprints for our prompt quo-Latest brochure sent upon request. CARLSTROM PRESSED METAL CO., INC. 58 Fisher Street Westbore, Mass

# Special Washers

We carry in stock Silicon killed steel specially suited for case-hardening. Stock dies for producing washers from .0015 to 14" thick.

Thomas Smith Company 294 Grove St., Worcester, N

#### SPECIAL MACHINERY

DIAMITE Abrasive Resistant Castings NI-RESIST Heat & CorrosionResistant Castings P M G BRONZE High Strength Acid Resistant

Cnatings
Fully Equipped—Pattern Foundry & Mashine Shep
Facilities—Castings to 15 tens
Wanthorly, Pa. Weatherly Foundry & Mfg. Co., Weatherly, Pa.

#### DROP FORGINGS

Special Forgings of Every Description. We solicit your prints or model for quotation.

Wilcox Forging Corporation Mechanicsburg

**Electrical** 

Venezuelan Steel Plant.

fidence to:

ENGINEER ...

Graduate Electrical Engr. with experience — STEEL PLANT EQUIPMENT and CONSTRUCTION — desired for

Forward resume of experience, edu-

cation & salary requirements in con-

RAMSEYER & MILLER, INC.

11 West 42 St., New York 36, N. Y.

#### HELP WANTED

# METALLURGICAL ENGINEER

with at least 5 yrs. experience in wire drawing of stainless steels & related alloys needed by mfgr. in northern New Jersey area. Send complete record to

BOX G-986

c/o The IRON AGE, Chestnut at 56th, Phila. 39

#### EMPLOYMENT SERVICE

HIGH GRADE MEN—Salaries \$5,000 to \$25,000. Since 1915 thousands of Manufacturing Executives. Engineers, Sales Managers, Comprollers, Accounts, and other men of equal calibre have used successfully our confidential service in presenting their qualifications to employers. We handle all negotiations. Submit record with inquiry. The National Business Bourse, 20 W. Jackson Blvd., Chicago.

#### SITUATION WANTED

METALLURGIST—Desires Technical Service or Sales Position. Ferrous Research and Develop-ment experience. Excellent academic background. Young and ambitious. Free to relocate. Single. Box G-992, e/o THE IRON AGE, Chestnut at 56th, Philadelphia 39.

ESTABLISHED SALESMAN wants commission representation imported steel for Texas and tion or New York importer interested in volume adjacent states. Desire only direct mill connecsales. Reply Box G-989, c/o THE IRON AGE. Chestnut at 56th, Philadelphia 39.

# METALLURGICAL ENGINEER

In Newark, N. J. area with at least 5 yrs. experience cold rolling of stainless steels & related alloys. Send complete record to BOX G-987

c/o The IRON AGE, Chestnut at 56th, Phila. 39

# ROLLING MILL

Outstanding immediate opportunity and excellent future in steel division of leading corporation nearing completion of first phase of long range expansion program.

Must be thoroughly experienced in semi-continuous and hand merchant bar mill operation.

BOX G-991 c/o The IRON AGE, Chestnut at 56th, Phila. 39

# SUPERINTENDENT

WIRE DRAWING FOREMAN

Wanted by firm manufacturing stainless steel & non-ferrous wire, located Newark,

N. J. area. Address reply to

BOX G-978 c/o The IRON AGE, Chestnut at 56th, Phila. 39

# COLD ROLLING FOREMAN

For non-ferrous & stainless wire mfr. located northern New Jersey area. Send reply to

BOX G-977 c/o The IRON AGE, Chestnut at 56th, Phila. 39

#### ROLLING MILL SUPERVISOR

Applicant must be a college graduate with 5-10 years rolling mill experience, preferably in the Blooming Mill. This positain will offer and technical skills and provide an excellent opportunity for advancement.

BOX G-984
c/o The IRON AGE, Chestnut at 56th, Phi'a. 39

# The IRON AGE

Chestnut & 56th Sts., Philadelphia 39, Pa.

Please send me rates and general information about the Classified Section without obligation on my part.

.....Title

Company

Street

City 

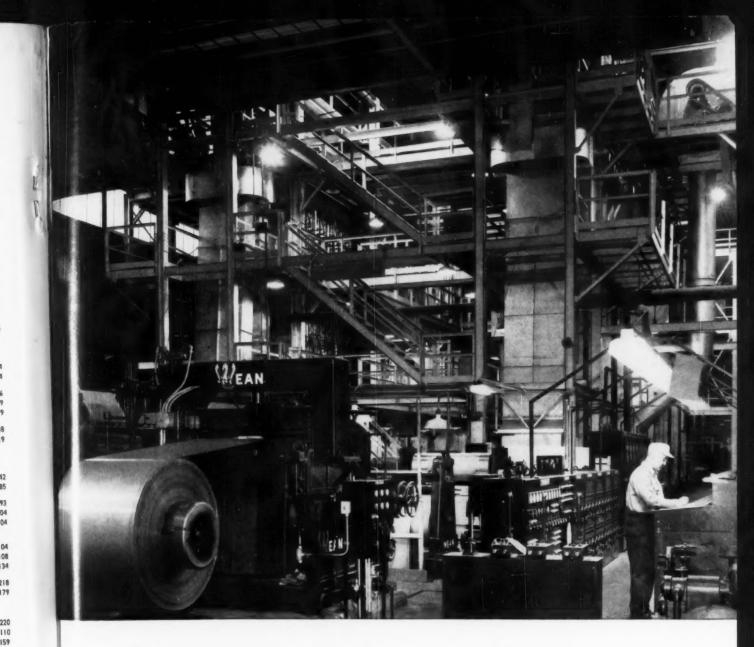
## ADVERTISERS IN THIS ISSUE

A	1
Acme-Newport Steel Co 177	
*Acme Visible Records Inc 203	
Aetna-Standard, Div. of Blaw- Knox Co. 10	1
"Allegheny Ludlum Steel Corp.,	1
Carmet Div. 79	1
*Aluminium Limited Sales Inc., 66-67 *Aluminum Co. of America 190-191	1
*Amchem Products, Inc 207	1
American Air Compressor Corp. 218	,
American Chain Div., American Chain & Cable Co., Inc 186	
American Gas Association 94	
American Gas Furnace Co 76	E
*American Pulverizer Co 16	
American Society for Metals 184	E
*American Steel Warehouse Association 189	1
American Steel & Wire Div., United States Steel Corp 104	1
United States Steel Corp 104	
Anaconda Aluminum Co	1
*Associated Spring Corp. 54	1
The state of the s	1
В	
*Babcock & Wilcox Co.,	
Refractories Div 50	1
Baldt Anchor, Chain & Forge	1
Div. 220 Baldwin-Lima-Hamilton Corp.,	
Barnes, Wallace Co., Div. Asso- ciated Spring Corp 54	*
Barnes, Wallace Co., Div. Asso- ciated Spring Corp. 54 Barnes, Wallace Steel Div., As- sociated Spring Corp. 54 Barnes-Gibson-Raymond, Inc.,	13
sociated Spring Corp 54	(
Barnes-Gibson-Raymond, Inc., Div. Associated Spring Corp., 54	1
Div. Associated Spring Corp 34	
Bearings, Inc. 5 Belyea Co., Inc. 218	1
*Benchmaster Manufacturing Co. 178	1
Bertsch & Co	1
Bethlehem Steel Co	1
Blaw-Knox Co., Aetna-Standard Div. 10	
Bond Industrial Machinery Co. 219	1
Borg-Warner Industrial Cranes., 41	
Boynton, A. J., & Co 108	
Bristol Brass Corp. 44	1
*Brown & Sharpe Mfg. Co., 25, 26-27, 28-29, 30	1
*Buffalo Forge Co 91	1
	1
c	1
Calumet Iron & Supply Co 219	1
Carco Industries, Inc 220	1
Carlstrom Pressed Metal Co 220	
*Carmet Div. Allegheny Ludlum Steel Corp. 79	
Carpenter Steel Co	
Chicago Screw Co 99	1
*Chicago Tramrail Corp 136	!
Cincinnati Milling Machine Co.	1
Cleveland Crane & Engineering	1
Co., Steelweld Machinery	
Div	
Cleveland Metal Abrasive Co 109 Columbia-Geneva Steel Div.,	
United States Steel Corp 104	1 .
Consumers Steel & Supply Co 219	1.
*Copperweld Steel Co., Aristoloy	
Steel Div Inside Front Cover Copperweld Steel Co., Ohio	-
Seamless Tube Div 74	1
*Crucible Steel Co. of America	1
	1
D	1
*Danly Machine Specialties Inc., 101	!

as a convenience. Nerrors or omissions.	0
01 01113310113.	
Demag	83
*Denison Engineering Div. American Brake Shoe Co.	129
*Detroit Steel Corp.	201
Dow Chemical Co	
Dreis & Krump Mfg. Co	15
Drop Forging Association	31
Dunbar Bros. Co., Div. Associated	-
Spring Corp	54
Dynapak Convair Div. of General	194
Dynamics Corp	122
E	
Eastern Machinery Co	
Eastern States Steel Corp	219
Erie Forge & Steel Corp	53
*Euclid Crane & Hoist Co	72
Eveready Supply Co	218
F	
Fabrikant Steel Products Inc	158
Federal Bearings Co., Inc Federal-Mogul Service Div. of Federal-Mogul-Bower Bearings Inc.	113
Federal Mogul Service Div. of	
Inc.	43
*Foote Mineral Co	17
Foster, Frank B., Inc.	
Foxboro Co.	
G	
General Electric Co48-49, 59	
General Ore & Chemical Corp	219
General Steel Castings Corp.	110
National Roll & Foundry Div	117
Gibson, Wm. D., Co., Div. Asso- ciated Spring Corp.	54
*Gisholt Machine Co	111
*Gleason Works	73
Goodman Electric Machinery Co.	
Goss & DeLeeuw Machine Co	
Greist Manufacturing Co	
*Gulf Oil Corp146	-147
н	
*Handy & Harman	52
Hardinge Mfg. Co.	220
Hartford Machine Screw Co	99
*Hendrick Manufacturing Co	82
Henry, A. T., & Co., Inc	217
Hughes, Arnold, Co	219
*Hussey, C. G., & Co.	152
Hydraulic Press Mfg. Co	55
Hyman, Joseph, & Sons	218
The state of the s	_10
1	
*Ingersoll-Rand Co	65
Inland Steel Co	154
Innocenti Corp	183
International Business Machines	
Corp.	97
J	
	-
	.32
*Jeffrey Mfg. Co.	114
*Jeffrey Mfg. Co. *Jones & Lamson Machine Co	114
*Jeffrey Mfg. Co. *Jones & Lamson Machine Co Jones & Laughlin Steel Corp.	77
*Jeffrey Mfg. Co.  *Jones & Lamson Machine Co Jones & Laughlin Steel Corp., Stainless & Strip Div	77
*Jeffrey Mfg. Co.  *Jones & Lamson Machine Co Jones & Laughlin Steel Corp., Stainless & Strip Div	77
*Jeffrey Mfg. Co.  *Jones & Lamson Machine Co Jones & Laughlin Steel Corp., Stainless & Strip Div	77
*Jeffrey Mfg. Co.  *Jones & Lamson Machine Co Jones & Laughlin Steel Corp., Stainless & Strip Div.  Jones & Laughlin Steel Warehouse Div.  K  Keystone Forging Co.	77
*Jeffrey Mfg. Co.  *Jones & Lamson Machine Co  Jones & Laughlin Steel Corp.,  Stainless & Strip Div	77 120 220 216

ADVERTISERS IN TH	IS ISSUE	L	Rockwell-Standard Corp. Spring Div 219
		*L & J Press Corp	Roebling's, John A. Sons Corp 51
		*Landis Machine Co., Inc 40	Rosedale Foundry & Machine Co. 220
An asterisk indicates t	hat a booklet, or other	Lang Machinery Co., Inc 219 *LaSalle Steel Co 35	Russell, Burdsall & Ward Bolt & Nut Co
information, is offered in	the advertisement.	*Latrobe Steel Co	Ryerson, Jos. T., & Son, Inc 198
This index is published	as a convenience. No	*LeBlond, R. K., Machine Tool	
		Co. 156 Leeds & Northrup Co. 92	\$
liability is assumed for e	errors or omissions.	Limitorque Corp	SKF Industries, Inc.
1		Lincoln Electric Co	Salem-Brosius, Inc
-	Demag 83	Lindberg Engineering Co 14	Scovill Mfg. Co.
Acine-Newport Steel Co 177	*Denison Engineering Div. American Brake Shoe Co	Linde Co., Div. of Union Carbide	Mill Products Div87-88
*Acme Visible Records Inc 203	*Detroit Steel Corp 201	*Lodge & Shipley Co	Sharon Steel Corp
	Dow Chemical Co	Loewy-Hydropress Div., Baldwin-	*Shenango Furnace Co 187
*Allegheny Ludium Steel Corp	Dreis & Krump Mfg. Co 15	Lima-Hamilton Corp 78	Shwayder Co. 219 *Sier-Bath Gear & Pump Co
	Drop Forging Association 31		Inc., Flexible Coupling Div 58
*Aluminium Limited Sales Inc. 66-67 *Aluminum Co. of America 190-191	Dunbar Bros. Co., Div. Associated Spring Corp 54	м	Smith, Thomas, Co 220
*Amchem Products, Inc 207	*Duraloy Co	*McKay Machine Co 89	Somers Brass Co., Inc
American Air Compressor Corp. 218	Dynapak Convair Div. of General	MacCabe, T. B., Co	Stamco, Inc. 162 Standard Pressed Steel Co 47
American Chain Div., American Chain & Cable Co., Inc 186	Dynamics Corp	W. Bliss Co Back Cover	Standard Screw Co
	E	*Mahon, R. C., Co	*Steelweld Machinery Div., Cleve-
American Gas Association 94 American Gas Furnace Co 76	Eastern Machinery Co 217	*Malleable Castings Council 18-17	land Crane & Engineering Co22-23
	Eastern States Steel Corp 219	Marshall Railway Equip. Corp 217	Struthers Wells Corp 217 *Surface Combustion Corp.,
	Erie Forge & Steel Corp 53	*Messinger Bearings Inc 100 Metal Progress Magazine 184	Heat Treat Div
*American Steel Warehouse As-	*Euclid Crane & Hoist Co 72	Metallurgical Products Dept. of	_
American Steel & Wire Div.,	Eveready Supply Co 218	General Electric Co 86	Т
United States Steel Corp 104		*Midvale-Heppenstall Co 4	Tennessee Coal & Iron Div., United States Steel Corp 104
Anaconda Aluminum Co 103		Miles Machinery Co	*Texaco Inc
	Fabrikant Steel Products Inc 158	Milford Rivet & Machine Co 191 Miller Electric Mfg. Co., Inc 188	*Textile Machine Works,
*Associated Spring Corp 54	*Federal Bearings Co., Inc 113 Federal-Mogul Service Div. of	Minnesota Mining & Mfg. Co.,	Contract Div 96
В	Federal-Mogul-Bower Bearings	Adhesives, Coatings & Sealers Div	Towmotor Corp. 69 Tractor & Equipment Co 219
	*Foote Mineral Co	Morrison Railway Supply Corp 219	*Trent Tube Co., Subsidiary of
*Babcock & Wilcox Co., Refractories Div	Foster, Frank B., Inc	Morse Chain Co. a Borg-Warner	Crucible Steel Co. of America 38
Baldt Anchor, Chain & Forge	Foxboro Co	Industry 93	Turnomat Co., Inc 219
Div		*Mundt, Chas., & Sons 215	
Baldwin-Lima-Hamilton Corp., Loewy-Hydropress Div 78	G		
Barnes, Wallace Co., Div. Asso- ciated Spring Corp 54	*General Electric Co 48-49, 59, 75	N	Union Carbide Corp., Linde Division 42
Barnes, Wallace Steel Div., As-	General Ore & Chemical Corp 219	National Acme Co	United Engineering & Foundry Co. 85
sociated Spring Corp 54	General Steel Castings Corp., National Roll & Foundry Div 119	National Machinery Exchange 218	United States Rubber Co., Mechanical Goods Div
Barnes-Gibson-Raymond, Inc.,	Gibson, Wm. D., Co., Div. Asso-	National Malleable & Steel Cast-	United States Steel Corp 104
Div. Associated Spring Corp 54 Bearings, Inc	ciated Spring Corp 54	ings Co 39	United States Steel Export Co 104
Belyea Co., Inc	*Gisholt Machine Co	National Roll & Foundry Div., General Steel Castings Corp 119	United States Steel Supply—Steel
*Benchmaster Manufacturing Co. 178	Goodman Electric Machinery Co. 218	National Tube Div., United States	Service Centers Div. United States Steel Corp 104
Bertsch & Co 108	Goss & DeLeeuw Machine Co 108	Steel Corp 104	U. S. Steel Wire Spring Co 108
Bethlehem Steel Co	Greist Manufacturing Co 220	New Britain-Gridley Machine Div., New Britain Machine Co. 98	Universal-Cyclops Steel Corp 134
Blaw-Knox Co., Aetna-Standard Div. 10	*Gulf Oil Corp146-147	New Britain Machine Co 98	Universal Machinery & Equipment Co
Bond Industrial Machinery Co 219	_	New England Pressed Steel Co 220	*Urick Foundry Co 179
Borg-Warner Industrial Cranes . 41	н	New York & New Jersey Lubri-	
	*Handy & Harman 52	cant Co 58	٧
	Hardinge Mfg. Co	*Niagara Blower Co	Vac-Alloys, Inc
25 27 22 22 22 24	*Handrick Manufacturing Co 82	Nicholson File Co	Vanadium Corp. of America 110
*Bullete Forms Co 91	Henry, A. T., & Co., Inc 217	Norfolk & Western Railway 145 Norton Co., Refractories Div 33	Virginia Gear & Machine Corp. 159 Voss Engineering Co
	Hughes, Arnold, Co 219	Norton Co., Refractories Div 33	voss Engineering Co
c	*Hussey, C. G., & Co 152	0	W
	Hydraulic Press Mfg. Co 55	Ohio Seamless Tube Div. of	Wagner Electric Corp 37
Carco Industries, Inc	Hyman, Joseph, & Sons 218	Copperweld Steel Co 74	Wallack Bros
*Carmet Div. Allegheny Ludium	1	Ohio Steel Foundry Co 160	Ward Steel Co 163
Steel Corp. 79		Olson Manufacturing Co 220	Wean Engineering Co., Inc. Inside Back Cover
Carpenter Steel Co	*Ingersoll-Rand Co	Ornitz Equipment Corp 218	Weatherly Foundry & Mfg. Co 220
Cilicago Screw Co 77	Innocenti Corp	*Osborn Mfg. Co., Brush Div 180	*Webb Corp
Cincago riamium corp 136	International Business Machines		Weiss, B. M., Co 219
Cincinnati Milling Machine Co., Grinding Wheels	Corp. 97		Weiss Steel Co., Inc
Cleveland Crane & Engineering	Iron & Steel Products, Inc 216	Parker Rust Proof Co	Wender Presses, Inc
Co., Steelweld Machinery		*Philadelphia Gear Corp 159	Screw Co 99
Cleveland Metal Abrasive Co 109	J	Pittsburgh Steel Co	Wheland Co
Columbia-Geneva Steel Div.,	*Jeffrey Mfg. Co32		Whisler Equipment Co 217
United States Steel Corp 104	*Jones & Lamson Machine Co 114 Jones & Laughlin Steel Corp.,	R	Wilsey Foreign Corp. 270
Consumers Steel & Supply Co 219 Copperweld Steel Co. Aristolov	Stainless & Strip Div 77	Rail & Industrial Equip. Co., Inc. 218	Wilcox Forging Corp 220
*Copperweld Steel Co., Aristoloy Steel Div	Jones & Laughlin Steel Warehouse	Ramseyer & Miller, Inc	Y
Copperweld Steel Co., Ohio	Div	Raymond Manufacturing Co., Div.	Youngstown Sheet & Tube Co 95
Seamless Tube Div	к	Associated Spring Corp 54	
	In .	*Ready-Power Co	CLASSIFIED SECTION
America	Veurtone English Co.	Spallenne Clartele & Controving	CEMPOLIER PERIOR
America	Keystone Forging Co	*Reliance Electric & Engineering Co	Clearing House
America	Keystone Forging Co	*Reliance Electric & Engineering Co	

Rockwell-Standard Corp.
Spring Div
Rosedale Foundry & Machine Co. 220
Businell Businell & Word Bolt
& Nut Co
& Nut Co
S
SKF Industries, Inc
Salem-Brosius, Inc. 36 *Schatz Mfg. Co. 24
Scovill Mfg. Co. Mill Products Div
Sharon Steel Corp
*Shenango Furnace Co 187
Shwayder Co
*Sier-Bath Gear & Pump Co., Inc., Flexible Coupling Div 58
Inc., Flexible Coupling Div 58 Smith, Thomas, Co 220
Somers Brass Co., Inc
Stamco, Inc
Standard Pressed Steel Co 47
Standard Screw Co 99
*Steelweld Machinery Div., Cleve- land Crane & Engineering Co 22-23
land Crane & Engineering Co22-23
Struthers Wells Corp 217
*Surface Combustion Corp., Heat Treat Div
riedi iredi bir
T
Tonnessee Coal & Iron Div
Tennessee Coal & Iron Div., United States Steel Corp 104
*Texaco Inc 64
*Textile Machine Works.
Contract Div. 96 Towmster Corp. 69
Towmotor Corp. 69 Tractor & Equipment Co. 219
Tract Tube Co Subsidiary of
*Trent Tube Co., Subsidiary of Crucible Steel Co. of America 38
Turnomat Co., Inc
U
Union Carbide Corp., Linde Division
Linde Division 42
United Engineering & Foundry Co. 85
United States Rubber Co., Mechanical Goods Div 193
United States Steel Corp 104
United States Steel Export Co 104
United States Steel Supply—Steel
Service Centers Div. United States Steel Corp
U. S. Steel Wire Spring Co 108
Universal-Cyclops Steel Corp 139
Universal Machinery & Equipment
Co
*Urick Foundry Co 179
v
Vac-Alloys, Inc
Vanadium Corp. of America 110
Virginia Gear & Machine Corp. 159
Voss Engineering Co 81
w
Wagner Electric Corp 37
Wallack Bros 219
Ward Steel Co. 163 Wean Engineering Co., Inc. Inside Back Cover
Wean Engineering Co., Inc.
Inside Back Cover
Weatherly Foundry & Mfg. Co 220 *Webb Corp
Weiss, B. M., Co
Weiss Steel Co., Inc
Western Automatic Machine
Screw Co 99
Wheland Co 163
Whisler Equipment Co 217
Whisler Equipment Co 217 Whitehead Metals, Inc
Whisler Equipment Co 217
Whisler Equipment Co. 217 Whitehead Metals, Inc. 130 Wilcox Forging Corp. 220
Whisler Equipment Co
Whisler Equipment Co. 217 Whitehead Metals, Inc. 130 Wilcox Forging Corp. 220
Whisler Equipment Co
Whisler Equipment Co
Whisler Equipment Co.         217           Whitehead Metals, Inc.         130           Wilcox Forging Corp.         220           Y         Youngstown Sheet & Tube Co         95           CLASSIFIED SECTION           Clearing House         216-219
Whisler Equipment Co



# Wean continuous strip annealing lines... the standard of quality the world over

Wean built equipment for the first continuous strip annealing line and, since that pioneer installation, has helped develop equipment for all types of continuous annealing: tin plate, silicon steel and stainless steel. In close working partnership with the steel industry, Wean has de-

219 163

220 196 219

219

163

217 130

220

. 220

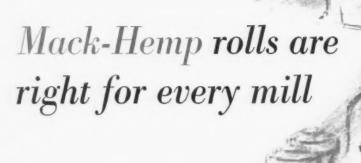
. 219

signed and built more annealing lines than all other builders combined.

This leadership is typical of the specialization that has made Wean the standard of quality for sheet, strip and tin plate processing equipment. This specialized experience is at your service.



THE WEAN ENGINEERING COMPANY, INC. . WARREN . OHIO



# ...IN MERCHANT MILLS

For typical conditions: Mack-Hemp Technigrain and Technigrain Special alloy iron rolls give you exactly the degree of wear resistance you need for normal production run conditions in roughers, strands and leaders. Tailored to your specific requirements, these rolls have deep hardness penetration to assure minimum wear in the passes through many redressings.

For finishing: You'll find that Mack-Hemp Nironite C Special nickel alloy grain iron rolls have the hardness and fine grain structure to roll a top-quality finish on your merchant products in normal production runs.

For severe, heavy-draft conditions: If you have a tandem set-up that's been giving you a roll breakage problem, you can cure its tendency with Mack-Hemp Technikrome, Stironite or Supermetal high-carbon alloy steel rolls. All of these roll types can be used for roughers, intermediates and finishers. They are alloyed for increased-strength and wear resistance, with Supermetal and Stironite rolls showing somewhat higher hardness.

Every Mack-Hemp roll that leaves our plants has been as carefully mated to your specific mill conditions as we know how to make it. It's your guarantee of getting more tonnage from the rolls with the striped red wabblers.

MACKINTOSH-HEMPHILL . DIVISION OF E. W. BLISS CO.

Pittsburgh and Midland, Pa.

chniwear is in uiressure

pecial grain ducts

dem te or types y are tuper-

careow to rolls